

Developing the foundation for achieving claims excellence

By David Sim, Principal Solutions Consultant, Oracle Health Insurance JAPAC

The Benefit of Managing Benefits

Member utilisation of their Private Health Insurance purchase is fundamental to value realisation, positive member experiences and increasingly vital in member retention. On average, Australian Health Insurers give back 87 cents of every premium dollar to Members in claim benefits. With mean management expenses for the industry at 9%, providing member value whilst sustaining margin performance is a tug of war for Private Health Insurers. Upward pressure on the cost of claims continues to be the primary driver of increased premiums for members year after year. Maximising product value to balance this equation puts pressure on margins.

Premium increases, of course, cannot persist at current rates forever, though one of the principal levers available to Health Insurers to mitigate this is ensuring the integrity of claims processes and benefits paid. The ability to tangibly affect the integrity of provider reimbursement and accuracy of benefits to members is critical in ensuring a sustainable product portfolio while maximising member value, especially when value perception of Private Health Insurance is under strain.

Claims and benefits management is a frontier ripe for innovation. Estimates of loss to claims leakage in the Private Health Insurance System in Australia range from 1-7%, though anecdotally, our customers tell us this may be as high as 7-11%. A 1.5% loss to claims leakage equates to over \$300M, representing only the direct financial cost and not any extended remediation to find and recover leakage, which requires further time and money. These losses impede the ability to manage revenue cycles effectively and potentially erodes confidence in providers creating a barrier to closer strategic alignment.

We understand that claims processes are complex, and this complexity carries the potential for these processes to be exposed to costly inefficiencies. Entangled in process, siloed data and user error, improving claims processes can be relatively straightforward with the right tools, and the benefits significant for both product profitability and member experience.



“In our new environment with Oracle, we’re achieving 90-92 per cent auto-adjudication. That means we don’t need humans to touch those claims and means those claims are processed more accurately.”

Deborah Norton
SVP of IT and Operations
Harvard Pilgrim Healthcare

The Importance of Accurately Priced Claims

Calculating and paying benefits on incorrectly submitted provider fees is a sure way to cause erroneous reimbursement. Effective claims pricing is enabled by efficiently managed provider data, integrated provider contracts, and automated claims pricing by leveraging adaptive, rules-driven solutions. As a result, accurately priced claims immediately deliver reductions in claims leakage. Previously, claims pricing and adjudication have operated in silos. These must be interconnected to streamline operational processes and maximise margins by reducing frictional costs across the value chain.

The Advantage of Automated Adjudication

To achieve highly accurate auto-adjudication at scale, technology must be built for purpose and be highly adaptable and transparent. The ability to manage variations in product benefits, facilitate eligibility checks, set combination rules, and provide limit detection and counters are critical for this purpose. However, claim automation should extend beyond a 'straight-line adjudication workflow. Interaction in real-time with external systems, such as peripheral reference data, rule engines, groupers or algorithms during the adjudication workflow is key to gaining the high levels of conclusiveness an accomplished claims process requires.

Additionally, adjudication should not be a set and forget exercise. Data should be accessible and timely to power analysis in guiding continual improvements in workflow. Discovering opportunities for improving claim integrity is one thing; making the necessary changes to realise value from them is another. This is where technology needs to break free from change limitations and enable SMEs to quickly test and deploy valuable improvements in accuracy and auto-adjudication rates. Many legacy environments aren't adequately configurable to take advantage of opportunities to adapt and change in a timely manner.

Artificial Intelligence in Health Insurance

Health insurance is anything but a linear process. The legacy approach to claims management based on inflexible rules has been made obsolete by the availability of modern, flexible and agile rules-driven solutions. The next evolution is integrating intelligent algorithms into core workflows that learn from historical data and continuously evolve. From outlier and anomaly detection to analytically identifying and correcting mistakes while avoiding unnecessary, costly interventions, AI can help Insurers optimise services, lower costs, accelerate processes, and make better decisions.

As the Australian Private Health Insurance industry navigates a transition path into a new paradigm driven by cost pressures and reform, there are immense opportunities for AI technologies. A potential example involves business models shifting to wellness and preventative care by predicting and more precisely managing and treating disease. Available technologies such as IoT, AI, and Machine Learning can provide predictive diagnostics, next best actions and ultimately healthier longer lives, thus efficiently delivering a new value proposition to Australians.

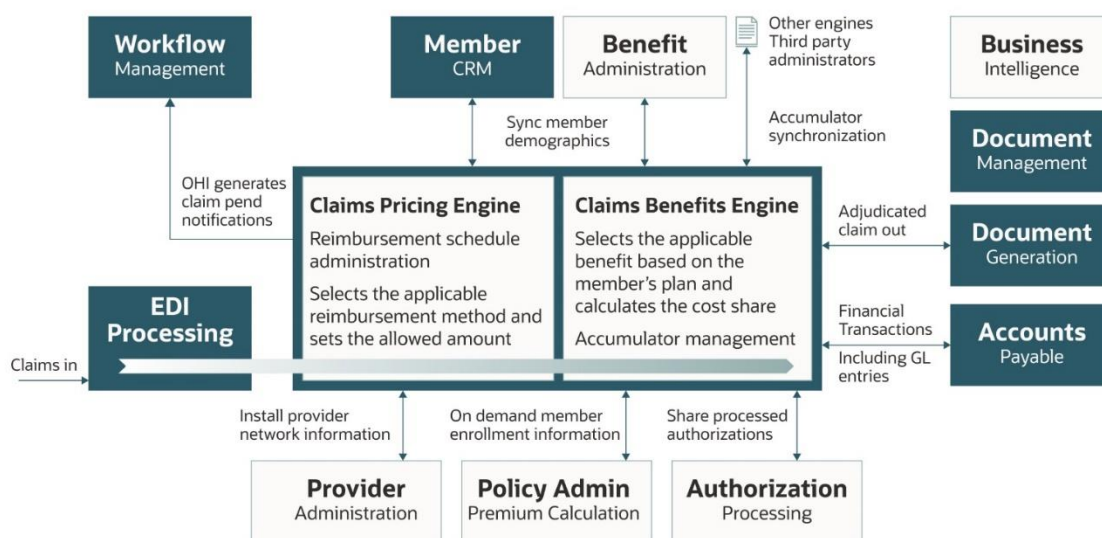


Oracle Health Insurance Principles for Healthcare Innovation

Oracle Health Insurance Claims Administration

Introducing Oracle Health Insurance (OHI) as the chosen solution for many for-profits and not-for-profit Private Health Payers and Public Health programs globally wanting the best in benefits management, customer experience and automation at scale. OHI customers have proven substantial fraud reduction, high levels of auto-adjudication rates, and unmatched agility demonstrated, especially in today's unprecedented times.

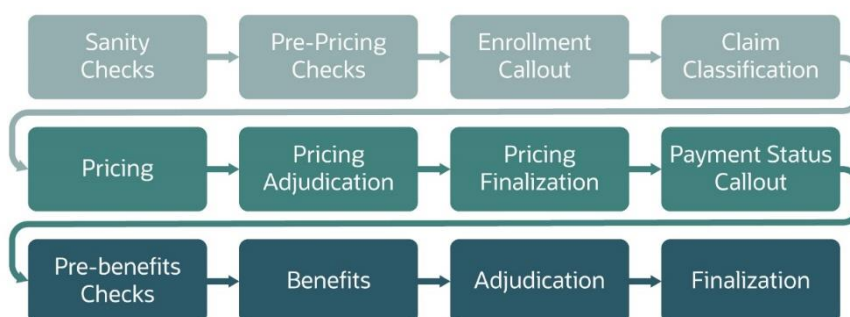
Oracle Health Insurance Claims Administration comprises service orientated modules that form a highly adaptable, automated end to end claims solution for the Australian Private Health Insurance industry. A highly specialised and expert application designed to achieve excellence in health insurance claim processing.



Positioning OHI Claims Administration

Rules-Based Workflow

A rule-driven approach to claim processing allows Insurers to implement an efficient, accurate and auditable claims process. Transactions entering OHI Claims Administration undergo a series of highly configurable rules-based steps, with each step in the workflow defined to manage a specific part of the end-to-end adjudication process, containing parameters and logic for ensuring the highest performance in claims processing.



Overview of Oracle Health Insurance Workflow

As the first and most robust defence line against claim leakage, configuration relies on parameterised rules specific to the health insurance industry. This flexibility also provides an agile approach to compliance with regulatory requirements without changing the standard software code.

Step Example 1: Sanity Checks:

Several rules execute once a claim enters the processing flow. It ensures that everything vital from a processing point of view is present and that every piece of information is matched, i.e. that the information provided successfully maps to reference data. Including completeness checks, further checks regarding time validity, and procedures are done for each claim line. E.g. time validity or procedure age and gender.

Step Example 2: Enrollment Call Outs:

This step sends out a request for the member's enrollment information. This can be referenced from existing Policy Administration systems. The purpose of this call out is to validate member information such as enrolled product, paid to date, waiting periods or family Identifiers for family-level limits.

Step Example 3: Claim Call Outs:

Utilising the available Claim Call-out Integration Point, call-outs to external components can be triggered within the claim flow. This allows OHI to utilise external system services such as DRG Groupers or Data and AI Services, including receiving and processing responses.

Oracle Health Insurance Claims Pricing

Oracle Health Insurance Claims Pricing is the primary foundation for claim process integrity, focusing on the contractual relationship between Insurers and their providers and networks. Automated pricing capability ensures that claims are priced correctly as identified to the contracted provider rates. OHI accomplishes auto-pricing rates by offering a wide range of configuration rules, including fee schedules and payment rules, as well as modifiers, multiple procedure parameters, and limit reductions. DRG grouping and claims editing components can be leveraged using configurable real-time call-out rules to external systems.

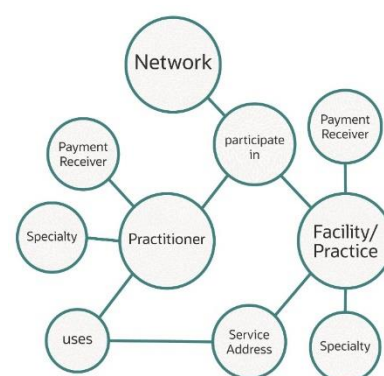
Eliminate discrepancies in your claim workflow by discovering pricing irregularities and only progress correctly priced claims for adjudication and payment.

- Reduced effort to manage and operationalise provider contracts
- Increased auto-pricing rates reducing operational costs, fraud and error
- Agility through an extensible data model to tailor the standard processing logic

Effortlessly Manage Provider Data

Larger Insurers face the additional challenge of managing complex provider networks and contracts needed to operationalise the claims process. The provider administration and contract functionality of Oracle Health Insurance Claims Pricing enable Insurers to manage provider networks, efficiently configure provider contracts, and automatically install these contracts in the claims pricing engine.

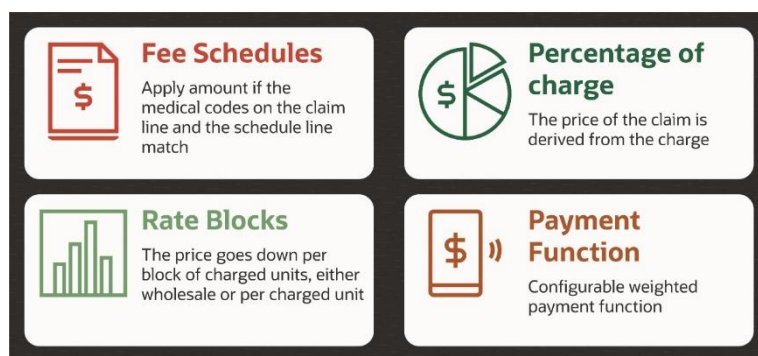
Provider and network structures can be extended with dynamic fields and dynamic records, allowing storing data unique to an insurer of any form. This allows the full complexity of provider records to be managed to form the basis for cost-effective reimbursement management.



OHI's Extensible Provider Data Model

Simplify Provider Contracts

Oracle Health Insurance Claims Pricing provides a repository of reusable provider contract configuration templates that allow insurers to rapidly configure new contracts or allow quick modifications to existing ones. Provider contract templates can share provider reimbursement methods, such as fee schedules, prospective payment systems, or configurable rules for reductions or outlier payments.



OHI Claims Pricing supports a range of configurable pricing methods

Claims Pricing Rules

Once correct prices are established, Oracle Health Insurance Claims Pricing then provides extensive business rules for further pricing calculations out of the box. Simple adjustment rules, combination rules, replacement rules, inclusion rules, lower-of rules, limit rules or encounter rules, to name a few. At any point in the workflow, transactions can be externalised or pending and raised for manual intervention with transparent messaging and notifications.

- Calculation of retrospective or prospective bundled payments across multiple claims and multiple procedures within a single claim and across multiple claims
- Automated bundling of claims into an episode of care
- Provider payment amount per claim line, per admission, per DRG
- Complete traceability of the applied provider contract configuration and the corresponding claims pricing results

Oracle Health Insurance Claims Adjudication

OHI Claims Adjudication provides benefit adjudication driven by the relationship of Insurers' members and their enrolled product. Designed for straight-through processing of claims and high auto-adjudication rates, OHI offers a wide range of configuration rules, including flexible benefits, eligibility matching, duplicate claim recognition, limit detection and counters, and a call-out capability that can incorporate neighbouring components in real-time.

A key challenge for Health Insurers with extensive and innovative product portfolios is the variety of product benefits. This requires a benefits engine that provides extensive flexibility while keeping configured services organised and categorised to deal with all the exceptions and variations. OHI Claims Adjudication achieves this through a centralised benefits catalogue allowing business users to add or change products through configuration, attach or change benefit specific rules; for example, for validating eligibility, entitlement, benefits, provider pricing agreements, and claim validations.

- Real-time claims processing - no need to wait for batch processes
- Preconfigured processing flow with the ability to modify system behaviour at various points in the claims flow
- Built to achieve high levels of auto-adjudication rates
- Complete traceability of applied rules and decisions, and configurable claims messages for maximum transparency

Adjudication Rule Logic

Oracle Health Insurance provides highly extensible industry-specific parameterisation, allowing configuration rules and measures limiting error or fraud possibilities.

These include, but are not limited to:

- Plausibility
- Medical Necessity
- Forbidden or mandatory combinations
- Gender, provider enrollment, pre-auth

Sanity Check

Is required information available?

Dynamic Checks

Does data meet conditions?

Combination Checks

Duplicate, exclusive and mandatory data

Derivation Rules

Extensible fields to influence claim flow

External Intervention Rules

Stop flow to intervene

Event Rules

Flow event notifications

Claim callout Rules

Configurable callout to external systems

Adjudication Rule Overview

Facilitating Accurate and Automated Eligibility Checks

Eligibility checks are a standard method for providers to gain authorisation before member admission or procedure. A vital step in the claims journey is that eligibility checks are often perceived more in the provider's interest to gauge what will be reimbursed by insurers. Due to complexity, reviews can be highly manual and rely on specialised teams to validate and manually adjudicate, leaving many open to the risk of interpretation.

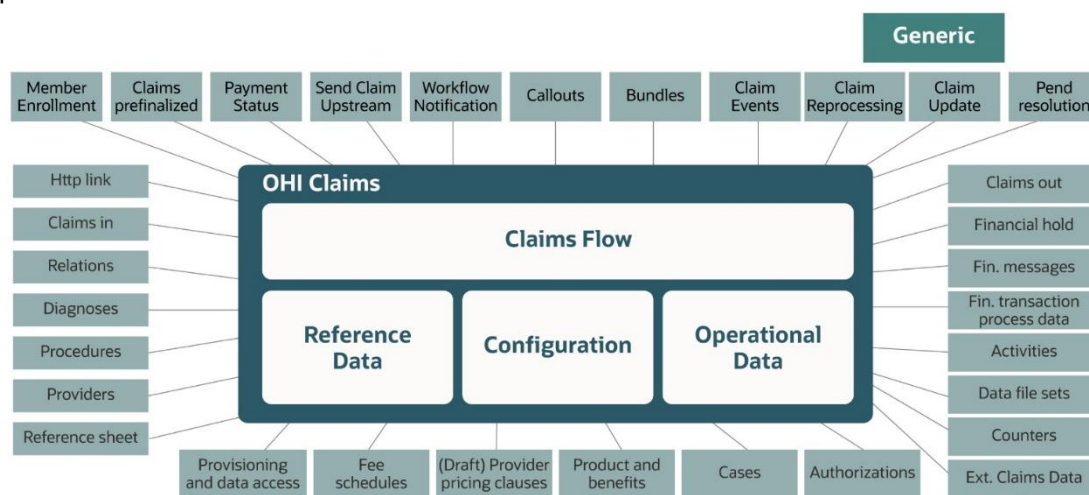
OHI Authorisations is a specialised rule engine that provides the flexibility to streamline and automate eligibility checks. OHI accomplishes this by facilitating predetermination claims for eligibility purposes before a claim is submitted. Utilising equivalent data and rules configured in OHI Claims Administration, the result provides insurers, providers, and members full insight into eligibility checks which reduce the number of subsequent errors, fraud propensity, inquiries and significantly increases claim auto-adjudication.

- Processed like a normal claim but does not pay a benefit
- Reduces fraudulent claim transactions by requiring an approved pre-authorisation
- The flow for regular claims can be extended to require a reservation
- Increases speed of adjudicating subsequent claims
- Counters are adjusted, effectively blocking out benefits to be consumed. Prevents duplications or limit exhaustion by other claims
- Includes integration points designed to share information with other systems. The retrieved information can be used to make informed decisions on whether to approve or deny the authorisation
- Financial messages can be configured to update ledgers

Data Interoperability for Claims Administration

Taking advantage of existing technology investments, Oracle Health Insurance is designed to integrate agnostically and built to perform as a component-based service-oriented architecture. It integrates easily with other components through standard integration points and a comprehensive set of web services that support the real-time exchange of data with third-party solutions, e.g. Case Management and Workflow, provider registries, claims editing, payment systems.

OHI components come with many standard web services that support integration into application landscapes.



OHI Claims Administration's Standard Integration Points

Generic RESTful API's allow Insurers to build an integration that hooks into the entity model of OHI. API's are ideally suited for building screens and integration with other applications. e.g. to synchronise information to Customer Analytics or rendering CRM. This includes API's available for fields or data points unique to an insurer created through extensibility.

The second set of web services are dedicated to **Integration Points**. These are readily available and designed to support specific business processes that require a system to system integration. Integration points support task-orientated operations where a level of logic is needed. E.g. submission of a claim, call out to AI/ML or financial messaging.

OHI provides an API-driven approach to generate Reporting Views that incorporate custom attributes, which enable ease of reporting and complete data transparency. Optionally available tools such as Oracle Data Visualization Desktop or Oracle Analytics Cloud Service provide rich visualisation of application data.

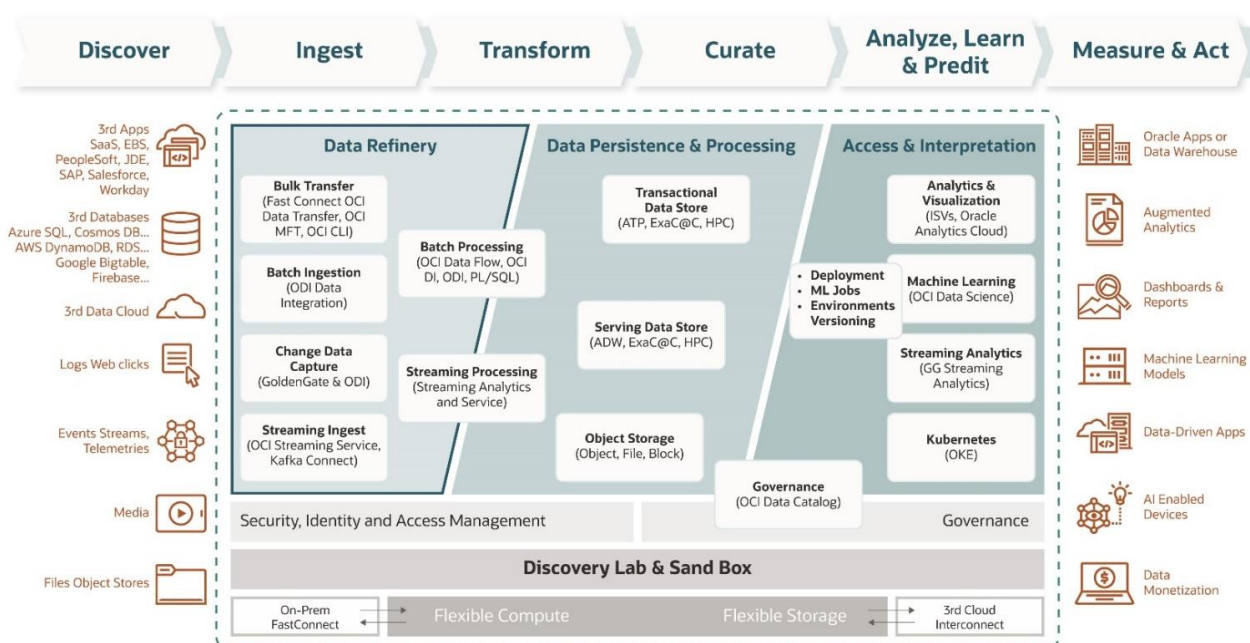
Oracle Insurance Gateway

Included with Oracle Health Insurance is the Oracle Insurance Gateway (OIG). OIG streamlines the integration of OHI components with other systems within a technology landscape, providing substantial interoperability capability.

- Supports a wide variety of integration scenarios
- Supports multiple integrations flows: Scheduled or invoked separately
- Collect data from the source system
- Invoke external processes
- Transform data for compliance purposes
- Deliver data to single or multiple target system(s)

Oracle Artificial Intelligence and Machine Learning

Oracle Data and AI Services support on Oracle Cloud



Oracle Data and AI Offerings

At Oracle, we recognise the complexity of AI/ML projects and the various stages required to get complex use cases to production. The ML algorithms necessary for implementation must go through data discovery phases, ingestion and transformation to analysis and predictive model building, evaluation and deployment.

Oracle provides a comprehensive suite of managed services in all these stages to enable Insurers to implement complex AI/ML projects on an agnostic cloud platform. Oracle Data and AI services provide the tools and the ML stack of algorithms required for solutions such as advanced payment integrity systems, adaptable to the latest cutting-edge technology with complete customer control and flexibility to address fraud, waste, abuse, overpayment and recovery challenges.

Oracle Data and AI services can be integrated with any 3rd platform or service and are designed to fit any hybrid cloud architecture. Customers can decide what data to use and how to use it; the batch loading process could be utilised to train models when the entire data is not desired to be stored on the Cloud.

Payment Integrity System on Oracle Data Science Service

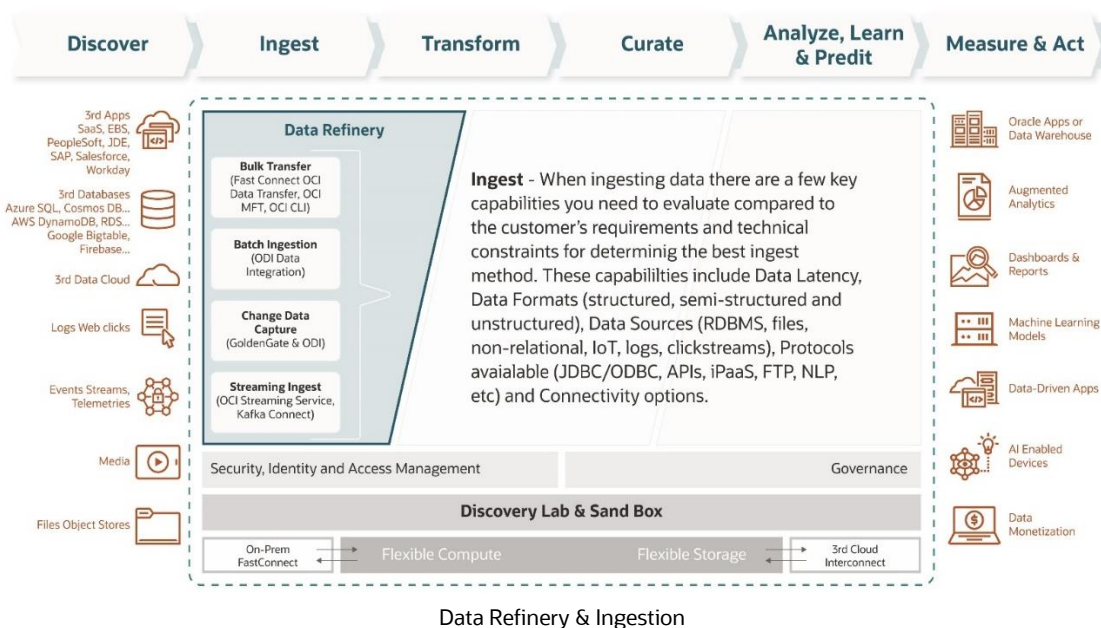
Oracle's fully managed Data Science AI&ML service comes pre-integrated with the latest algorithms required for fraud detection and provides the flexibility to adapt and use new techniques. The platform offers the capability to build several models, including anomaly detection, outlier detection or predictive models.

Oracle Data Science Services fully supports the latest development of neural network analysis and has integrated Auto ML, AI Models Evaluation, and AI Models Explainability capabilities. NLP language processing is fully supported and allows engagement with the latest state of the art language transformers. Further, Oracle Cloud Infrastructure provides the latest state-of-the-art hardware state to minimise the time to market any AI application.

Oracle Data Science Service is wholly managed with an integrated version controlling mechanism on the environmental level to allow reproducibility and easy deployment of AI models. The services support easy deployment mechanisms that enable customers to bring the latest fraud detection development to test quickly and in production. Oracle Data Science Service ML Jobs allows additional scalability and resource management, where large scale distributed training on neural nets can be executed.

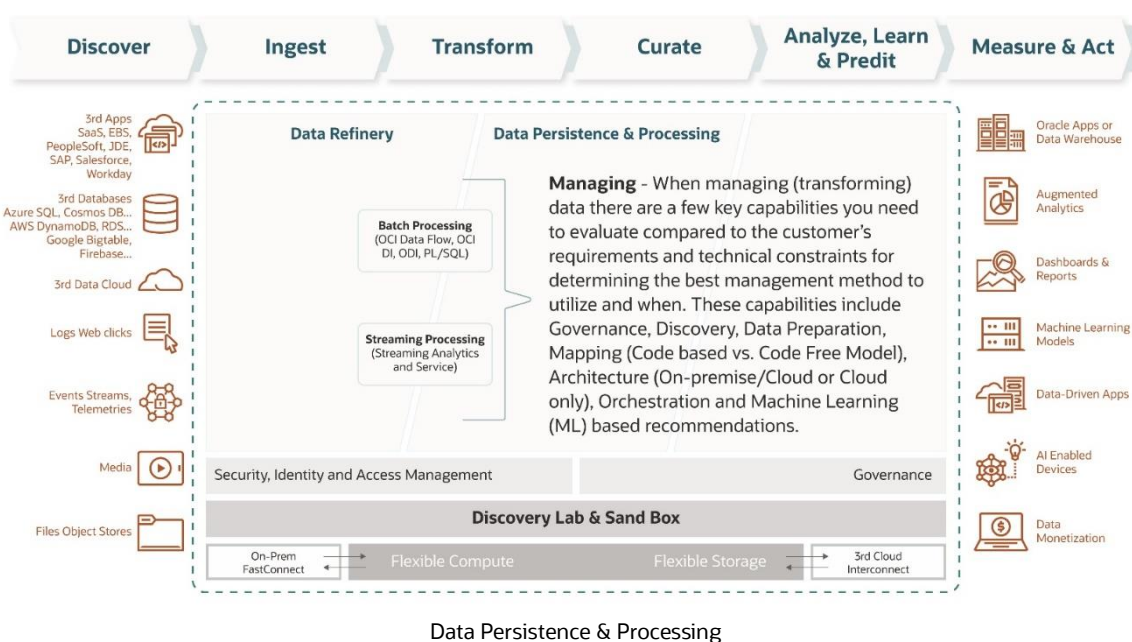
Data Refinery and Ingestion

AI/ML algorithms cannot learn without data. Claims Payment Integrity Systems require customer-specific data to function correctly. To train fraud detection algorithms, we digest and ingest historical data and transform it to be suitable for the algorithms to learn. Additionally, new live data will be streamed to the predictive models, revalidated and processed live.



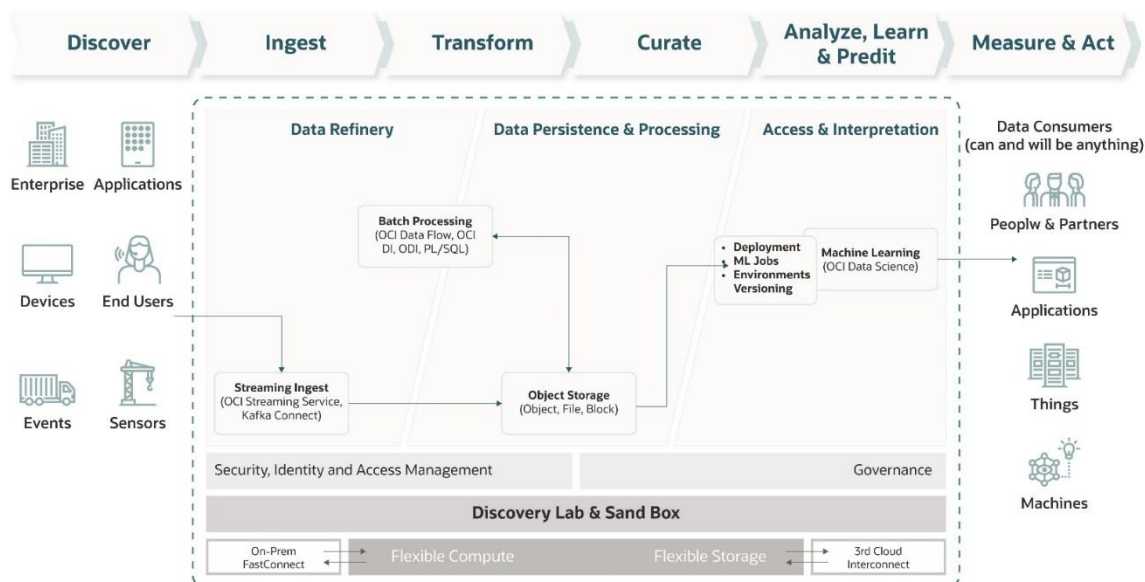
Oracle Fast Connect provides safe and secure connectivity with existing customer data storage and data centres, with no additional egress or ingress cost to transfer the required data. Tools like Oracle Data Integration and Data Flow can batch process, transform and store the data in a form suitable for the algorithms to proceed.

Oracle Cloud Streaming service provides a fully managed, scalable, and durable solution for ingesting and consuming high-volume data streams in real-time.



Typical Machine Learning Implementation on Oracle Cloud goes beyond streaming or acquiring the data. Data can be additionally batch processed and securely stored on Object Storage. Oracle Data Science Service contains the required algorithms for fraud detection to read the data and proceed with a predictive model building. The

models can be additionally evaluated using Oracle Auto ML and Model Evaluation technology. Using the Oracle Data Science Deployment mechanism, the fraud-detection model can be developed in test and later production for end application consumption.



Data Access & Interpretation

AI/ML Environment Integrated Version Controlling

Complex machine learning solutions suffer from the challenge of reproducibility. Payment Integrity Systems should be built on ML Integrity Safe environments to allow Insurers to reproduce fraud attacks or other governance purposes for testing legally. Oracle solved this problem by introducing version-controlled Data Science Environments. At any moment in time, the environment could be reverted to a version used during a given time of usage.

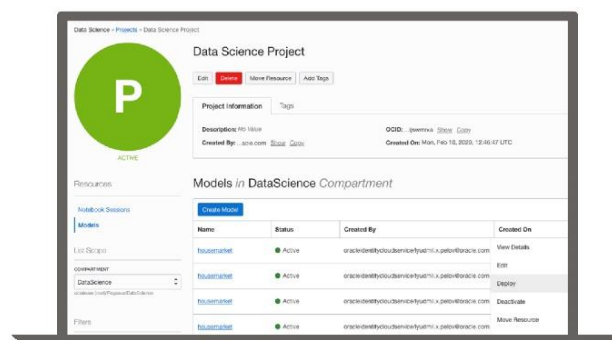
The underlining infrastructure will be automatically adjusted and generated. Every time a predictive fraud detection model is built, it will be linked to the user environment to allow automatic deployment or reproduce the setup at the model training time.

Easy Model Deployment

At Oracle, we acknowledge the challenge of controlling and deploying AI/ML predictive models to test and produce. For this purpose, Oracle created a Model Catalogue as a central location for each AI/ML project to store and control the models built with the Data Science Service. Utilising the Environments Manageability feature, the Model Catalogue automatically learns what resources should be used

to deploy.

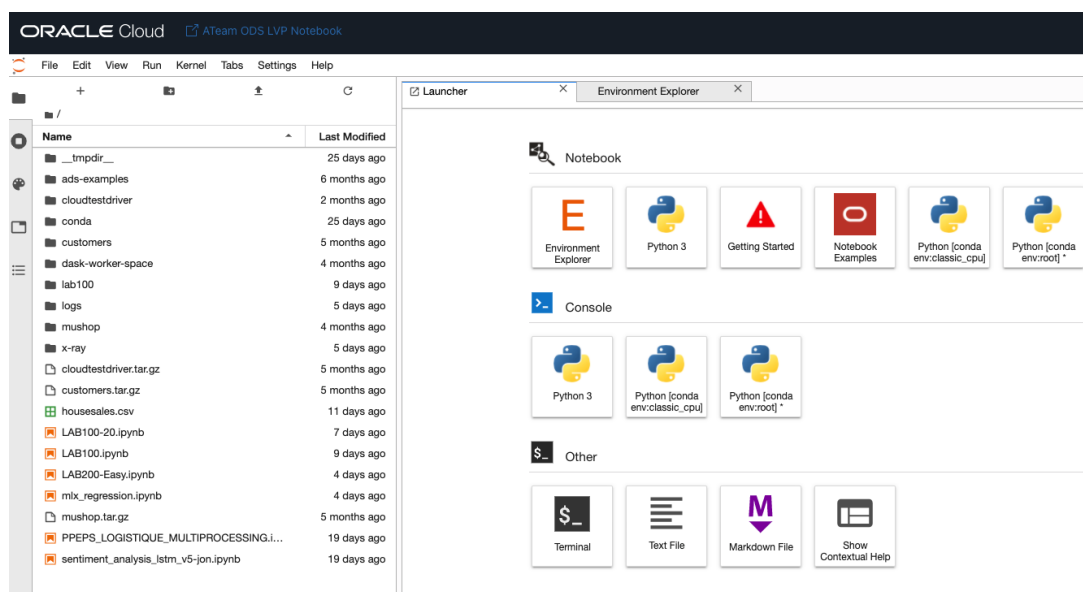
AI predictive models are additionally serialised and stored to make them deployable to 3rd party services.



Oracle Model Catalogue

Open Data and AI Collaborative Platform

Oracle Data and AI managed services used to build Payment Integrity Solutions are based on Open Source established tools to minimise onboarding costs. Oracle Data Science is based on the popular collaborative platform Jupyter Notebooks. It is fully managed and extends the capabilities around package and environment managed and version control.



Oracle Data Flow is Spark-based and integrates the framework supported languages, fully managed: Java, Python, SLQ, Scala

Fully Open Services

Oracle Data Science Services allows complete control over the installation process and flexibility of 3rd party libraries required to implement fraud detection. There is no limitation to what library can be installed and how many. Customers can specify the size of the storage per AI/ML environment. The services are fully capable of integrating with the Oracle Health Insurance Platform.

Integrated Data Lakes: Big Data, Data Flow and ETL

Oracle Managed Cloud Data Integration (ODI) merges all Big Data, Data Flow, and ETL capabilities to a single location. ODI allows oversight, management and monitoring of lifecycle and security policies for Oracle AI services. It provides Data Engineers and ETL developers the tools to develop, build and test data integration solutions and monitor and diagnose data integration executions.

Oracle Health Insurance Components

Oracle Health Insurance offers a complete end to end solution for Private Health insurers but in a genuinely components way. Each OHI component can be deployed individually in a component-based service-oriented architecture, or they can be deployed pre-integrated as a complete processing backbone to support primary processes.

OHI's component architecture solution reduces implementation complexity, enabling big bang or staged implementations. With scalable and secure business functionality designed with many standard web services and support integration into your application landscape, each component provides configurable rules and an extensible data model to allow quick reactions to ever-changing business requirements and regulations.

Available out of the box is OHI Configuration Migration, which supports propagation of configuration from development environments, to Test and Production environments in a controlled manner.

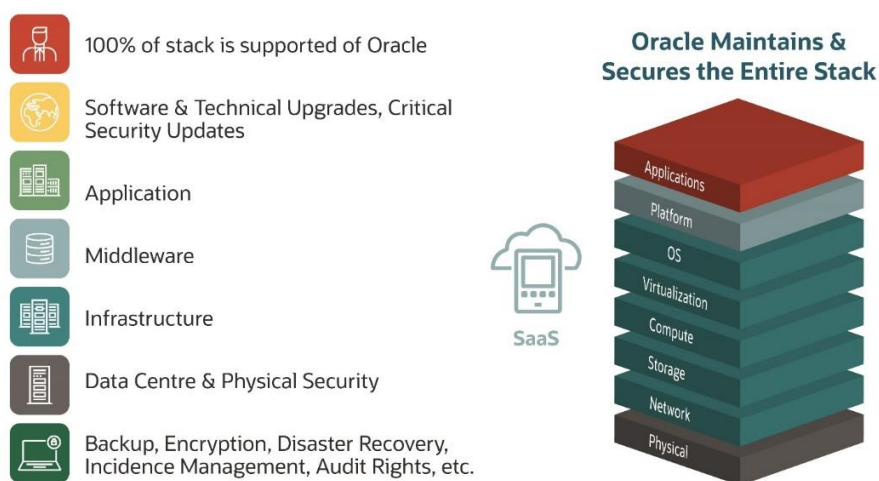
“Oracle was rated very highly for its modularisation, configuration and flexibility.”

Joanne Kadlecik
COO
Defence Health Limited



Oracle Cloud Services / SaaS

Cloud computing continues to change the way technology enables business innovation. Oracle delivers the broadest selection of enterprise-grade cloud solutions, including OHI Software-as-a-Service (SaaS). Oracle can help Insurers offload IT Management costs to focus on managing their enterprise—and their future. Oracle provides enterprise-level solutions that support all types of cloud-based scenarios, including public Cloud, private Cloud, and hybrid.



Oracle Health Insurance Software as a Service (SaaS)

Innovation in Health Insurance

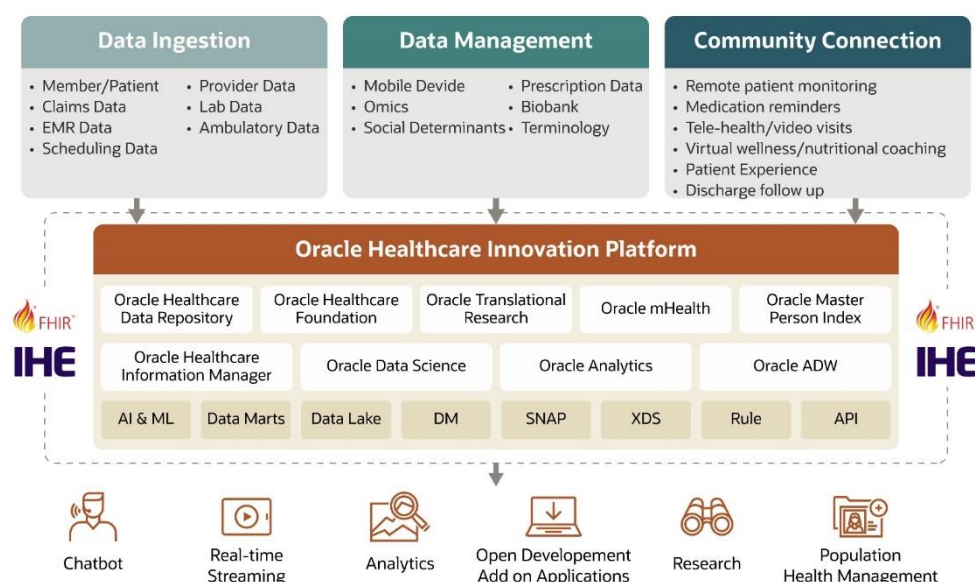
Oracle continues to work closely with customers and the industry worldwide to learn and support the innovation potential. Our Customer Advisory Board extends this beyond the continuing advancement of the OHI application and Oracle underlying technologies into developments and partnerships that provide OHI customers access to all insight and innovation that only Oracle can provide through its broad industry relationships.

OHI is currently engaging internally and externally to work within innovations such as:

- Blockchain (Smart Contracting, e.g. Out-of-Network claims)
- Wellness (Quantification of wellness against claims expense)
- FHIR standard Interoperability

“We keep on reinvesting in Oracle because of the successes we’ve had in the past.”

Christo Groenewald
Director, Health Business Enablement
Liberty Health



Oracle's Vision of Interconnected Healthcare Ecosystem

Value-Based Payments

A valuable OHI functionality utilised predominately in international markets, but a component option for Insurers is the capability to support Value-Based Payments – sometimes called ‘Pay for Performance’ or ‘Capitation’. This model provides bundled benefits paid on holistic participant health outcomes rather than each service.

This functionality is currently available bundled into OHI Claims Administration SaaS. Oracle can provide valuable consultation on implementing the best Value-Based Payments and the many other capabilities and innovations that can add value to Insurers, Providers and Members.

About Us

Part of Oracle's Financial Services Global Business Unit, Oracle Health Insurance is a division committed to supporting our health industries to drive down the costs of provisioning quality healthcare. A growing team of 250+ insurance professionals support over 30 Healthcare Payer Clients and over 450 Insurance clients globally.

The Oracle Health Insurance Solution was launched by Oracle in 1994 in Europe, with recent advancements to leverage the latest technologies to meet global market demands. This supported a rapid expansion of the application behind a critical strategic driver within Oracle of 'Healthier Societies'. In 2019 the OHI SaaS service was created, offering the latest in Cloud-based services throughout Oracle's growing data centres worldwide.

Oracle Health Insurance Team Australia and New Zealand

Our Oracle Health Insurance ANZ team located in Sydney, Melbourne and Perth



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Contact Oracle Health Insurance

The Oracle Health Insurance team in Australia has a dedicated demonstration system to introduce the OHI application. We are also readily available to work on proof of concepts using our vastly experienced team of local and globally based consultants and business analysts.

Contact us to discuss how Oracle Health Insurance can support your Fund's vision today.

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Oracle Health Insurance for Fraud Detection

- Real-time, rule-based validations to prevent payment of fraudulent claim payment
- Utilises call outs to external EHR solution
- Manual intervention in case of a suspicion of fraud

Customer Success and Results

- Utilising configurable rules, including pre-authorisations, resulted in a €32m reduction in fraud in 12 months
- 40% decrease of proven fraud cases in 1 year
- The average amount of fraud €48.97

	2015	2014
Fraud proven	11,117,187	18,718,856
Suspicion of fraud, not proven	5,018,265	7,479,362
Administrative error provider	2,349,577	26,156,650
Administrative error insured	461,592	56,213
No fraud	1,068,250	436,631
Total	€20,014,871	€2,847,712



Data Lab Finds Savings and Cost Reductions in Health Care Budget

With Oracle Machine Learning, the NHS Business Services Authority has optimised patient care while saving about UK €700 million.

- United Kingdom's National Health Service
- Identify billing and identity fraud
- Optimise treatment by reducing the use of less effective medical procedures
- Deployed Oracle Advanced Analytics and Oracle Business Intelligence on Oracle Exadata and Oracle Exalytics.

[Watch the video](#)

“With one vendor providing the whole solution, it’s very easy for us.”

Nina Monckton
NHS BSA

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