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Abstract

Braiins with SEA++ will make Financial Reporting, or <IR> Integrated Reporting, easy, natural, accurate, and timely for blockchain using entities of any kind or size anywhere, and provide semantic access (knowledge and human language based in any desired or possible view) to the data (publicly for public entities, optionally public for private entities), with the data standardised to be comparable across entities, jurisdictions, and accounting standards.

Braiins with SEA++

Concept Paper

Contents

[1 Vision 3](#_Toc488125344)

[1.1 History 3](#_Toc488125345)

[2 Need 4](#_Toc488125346)

[2.1 Integrated Reporting 4](#_Toc488125347)

[2.2 Legislative Reporting Environment 4](#_Toc488125348)

[2.3 Business Environment 5](#_Toc488125349)

[2.4 Technology Advances 5](#_Toc488125350)

[2.5 Failure of Financial Reporting Systems to Keep Up 5](#_Toc488125351)

[2.6 The Need for Braiins 6](#_Toc488125352)

[3 The Braiins Product and Community 7](#_Toc488125353)

[3.1 Production of Integrated or Financial Reports 7](#_Toc488125354)

[3.2 Review and Analysis of Integrated or Financial Report Data 9](#_Toc488125355)

[3.3 Networking via the Braiins Community 10](#_Toc488125356)

[3.4 In Total 10](#_Toc488125357)

[4 Product Scope 11](#_Toc488125358)

[4.1 Key Concepts 11](#_Toc488125359)

[4.2 What Braiins Is Not 12](#_Toc488125360)

[4.3 Braiins and XBRL 12](#_Toc488125361)

[5 Key Technical Features 13](#_Toc488125362)

[5.1 Standardised Information Model (SIM) 13](#_Toc488125363)

[5.2 Semantic Integrated Reporting (SIR) 14](#_Toc488125364)

[5.2.1 Personalised Access with Control 15](#_Toc488125365)

[5.3 Reporting 16](#_Toc488125366)

[5.3.2 Consistency Checks 16](#_Toc488125367)

[5.3.3 Search, Analyse and Compare Data 16](#_Toc488125368)

[6 The Result 18](#_Toc488125369)

[7 Conclusion 19](#_Toc488125370)

[Appendix 1 Standardised Information Model (SIM) 20](#_Toc488125371)

[1.1. SIM’s Better Structure 20](#_Toc488125372)

[1.2. Braiins Report Objects or BROs 21](#_Toc488125375)

[1.3. Properties 21](#_Toc488125376)

[1.4. SIM Breadth and Depth 22](#_Toc488125377)

[1.5. SIM and XBRL 23](#_Toc488125378)

[Appendix 2 The Technology 25](#_Toc488125379)

# Vision

**Note:** This document is under construction, with all rights reversed. Nothing in this document should be considered final.

Braiins with SEA++ will make Financial Reporting, or <IR> Integrated Reporting, easy, natural, accurate, and timely for blockchain using entities of any kind or size anywhere, and provide semantic access (knowledge and human language based in any desired or possible view) to the data (publicly for public entities, optionally public for private entities), with the data standardised to be comparable across entities, jurisdictions, and accounting standards. The availability of standardised semantic data in this way will enable an accountant using an accounting application that calls upon the SEA++ API to produce accurate and timely financial statements easily without recourse to the overly complicated eXtensible Business Reporting Language (XBRL). Further it will allow managers and business people to quickly produce adhoc reports without need for accountants or IT people, including such things as inter-entity comparisons, by means of a chatbot or dapp or app that uses the SEA++ API.

Braiins is the part of ‘SEA++ for Entities’ which organises the blockchain accounting and other data of an entity to deliver the above vision.

Entities need timely and accurate reporting for management purposes, and also must usually prepare reports for statutory purposes. Yet often the “financial reports” available to entities provide little guidance, being late, inaccurate, or obscure as far as the average business person is concerned. At the larger end of the scale, reports are complicated, error prone, and expensive to produce.

Accountants have struggled to meet the needs, because available tools have not been up to the task. SEA++ with Braiins will fix that.

## History

The genesis of Braiins was the work of David Hartley and a UK accountant named Charles Woodgate, in 2011 to 2013, following the introduction of mandatory iXBRL company reporting in the UK. It builds upon David’s work with software for the Accounting Profession over 30 years, to organise and categorise accounting data better.

The advent of the SEA blockchain provides the opportunity to make the original Braiins concepts, as extended and improved for blockchain use, available for all entities via ‘SEA++ for Entities’. This document describes how.

# Need

Many factors and trends contribute to the need for Braiins:

## Integrated Reporting

The world at large expects more of organisations in the 21st Century. This need has been recognised by many and in particular the [International Integrated Reporting Council (IIRC)](http://www.theiirc.org/) has been established. The IIRC is a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs.

The IIRC has developed an International Integrated Reporting (<IR>) Framework. As the IIRC site says:  
“<IR> is a process founded on integrated thinking that results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation.

An integrated report is a concise communication about how an organization’s strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term.”

Increasingly organisations will be looking for ways to provide integrated reporting. SEA++ with Braiins will make doing that the easy default.

## Legislative Reporting Environment

Existing financial reporting approaches have been rendered cumbersome, expensive, and error prone by changes in the legislative reporting environment:

* The creation and adoption of international standards (International Financial Reporting Standards or IFRSs) which are fundamentally different in approach or philosophy from previous GAAP (Generally Accepted Accounting Principles) based standards, are causing major changes in regulatory reporting world-wide and in the UK in particular.  
    
  The cost to entities of making such transitions can be large. [The Cost of IFRS Transition in Canada](http://issuu.com/fei_canada/docs/the_cost_of_ifrs_transition_in_cana?mode=embed&layout=http%3A%2F%2Fskin.issuu.com%2Fv%2Flight%2Flayout.xml&backgroundColor=F0693C&showFlipBtn=true) reports that the average cost ranged from CDN$150,000 for small companies to $4 million for large companies.
* Despite the success of the IASB (International Accounting Standards Board), the body responsible for the IFRSs, in creating and gaining international acceptance for IFRS, universality has not been achieved, and is not likely to be achieved in the foreseeable future. US GAAP is not going away any time soon. Even in the UK, where the IASB is based, we are faced with UK IFRS i.e. a UK specific version of IFRS.  
    
  So accountants and financial reporting will have to continue coping with multiple standards, which can even involve different philosophies for determining what is “true and fair” e.g. IFRS v GAAP.
* Even within an entity, there is an increasing requirement to report over multiple jurisdictions and multiple standards like those mentioned above e.g. US GAAP and IFRS and or UK IFRS  
    
  The differences between standards can in the worst case involve the production of completely separates sets of accounts from the raw data onwards, which is an obvious cost (waste) and potential source of error and confusion.
* Requirement to produce all reports in computer readable form – (i)XBRL.  
    
  XBRL was a laudable 1998 fresh start attempt to cope with some of the issues mentioned above, and with a lot of effort and commitment by many has been adopted around the world in consequence. As a result of learning and all the other changes in progress, XBRL has also been evolving “on the job” which, while good, has imposed its own set of keeping up issues.  
    
  Braiins specifically addresses this issue – see **Braiins and XBRL**.

## Business Environment

* Global impact – more businesses operating across multiple countries
* Interconnected supply chains and outsourcing
* Real time reporting and the increasing stakeholder readership
* Decentralised structures and increasing homeworkers, virtual workers, outsourced work
* Ever more sophisticated internal reporting systems; simple ledgers giving way to complex ERP systems
* Increasing competition – from other companies, technologies, industries and countries. Now, even your published accounts form part of your competitive armoury.

## Technology Advances

Technology advances such as blockchains; cloud computing (also known as SaaS - Software as a Service); mobile always on computing with more people wanting, and companies allowing or even encouraging BYOD (Bring Your Own Device); Web 2.0 going to Web 3.0 or the Semantic Web; Business Intelligence (BI) systems; ERP, CRM and BI systems, and BigData mean that the sources of an entity’s data can have changed (or are changing) drastically, and that the output medium for reports has and is changing also. Systems which accommodate these changes are needed.

## Failure of Financial Reporting Systems to Keep Up

By and large Financial Reporting Systems have not kept up very well. The complexities and constant changes have led to evolutionary change that has mostly involved tacking more on to what was there before, albeit with a prettier face.

Whereas an entity's general ledgers are controlled double entry environments, the financial statement and integrated reporting complexities mean that many entities, especially larger ones, use a multitude of Excel spreadsheets and Word documents that are pulled together to produce the financial statements. This has led to numerous errors, some quite serious, resulting in major and embarrassing restatements.

There are many products or systems which tackle parts of the process, under various banners

* Financial Statements or Accounts Production Systems
* Record to Report systems
* Disclosure Management and Collaborative Disclosure Management (CDM)
* Business Intelligence (BI) software
* Enterprise Performance Management (EPM)
* XBRL processor

yet they are all complicated, incomplete (lacking the ability to cope with the complete task for even one taxonomy/jurisdiction let along multiple ones), and lack the ability to work with blockchain data.

The result of the failure of any pre-SEA++ with Braiins system to provide the full solution has forced accountants to expensively cobble together hand crafted reports with serious risk of error.

## The Need for Braiins

The need for a better way is clear.

SEA++ with Braiins will provide the means for application developers to produce financial or integrated reporting systems, with all the hard work of organising the data done for them, and made available via the SEA++ API. This will usher in a new reporting ets for the blockchain business era.

# The Braiins Product and Community

Braiins has three principal roles:

* Production of Integrated or Financial Reports
* Review and Analysis of Integrated or Financial Report Data
* Networking via the Braiins Community

A person or entity can use Braiins for any one, any two, or all three of these roles.

## Production of Integrated or Financial Reports

In its Production of Integrated or Financial Reports role, Braiins is

For

any type or structure of entity or organisation

small to large

groups with any mixture of entity types

international entities

To

produce annual or periodic (usually quarterly) Integrated Reports

produce annual or periodic (usually quarterly) Financial Reports when Integrated Reports are not required

produce Regulatory Reports

In

HTML, interactive (dynamic semantic web), PDF, or open data formats

XBRL or iXBRL format as required by regulatory bodies

Under

applicable jurisdiction and accounting standards (taxonomies) including multiple ones e.g. US GAAP and IFRS, from ONE set of data

the integrated reporting framework (<IR>) if applicable

As   
  
a controlled automated Record to Report process rather than hand crafted art

By  
  
accountants who understand the accounting/report requirements and use of a web browser

Anywhere  
  
via any modern internet connected device with a reasonable screen, keyboard and mouse or pointing device (PC, laptop, tablet, phablet), with access control applied

Using  
  
data imported from entity GL or other sources, or entered via Braiins, and edited using Braiins

Easily and naturally thanks to

the Braiins fresh start KISS approach that hides all the complicated details

the use of normal business/accounting or simple/obvious terminology only

guidance all the way combined with process, control, and flexibility

cloud computing using infrastructure (servers, databases, clusters, pipes, languages) similar to that used by the world’s biggest web sites/services e.g. Facebook

continuous no-hassle upgrading for technical and standards changes

use of the Braiins Standardised Information Model (SIM) to standardise or homogenise diverse data into a common semantic form without size/range limits for storage, maximum information value, and to allow comparability. SIM is described in this document as it is central to how Braiins works its magic, but a person using Braiins does NOT need to know about SIM as it just works unobtrusively in the background to provide the required functionality as a good technology should.

use of the Braiins Semantic Integrated Reporting (SIR) methodology to make viewing or accessing the SIM data interactively to reveal insights flexible, natural and easy. Just as for SIM, SIR works unobtrusively behind the scenes so that a person using Braiins never even needs to know about it.

Safely as

traditional double entry accounting is used for ledger type data

everything is stored in the database with a record of how and when it was imported, entered, or edited, so that clashes or accidental overwrites are prevented, and mistakes can be corrected or reversed

knowledge of the application and taxonomies allows SIM to prevents many errors at source

validation and consistency checks are available and must be OK before any final report is produced

all data is kept indefinitely and safely via redundant storage on multiple cloud servers

Openly since

data can be exchanged with other systems whether cloud based or not:

data can be imported from many sources

all data can be exported in open formats

all data can be deleted

With

NO capital investment – pay as you go

NO lock-in either financially (no contract) or for data

NO range restrictions e.g. on number of subsidiaries or directors

NO detailed knowledge of XBRL, SIM, SIR, Excel, Word, databases etc. required

NO study or lengthy learning

NO hand-crafting i.e. no use of Word or Excel editing

NO upgrade hassles

NO worries mate – let Braiins take the strain

speed – Braiins is fast

pizzazz – Braiins is cool and nice to use

## Review and Analysis of Integrated or Financial Report Data

In its Analysis of Integrated or Financial Report Data role, Braiins is

For

authorised officers and staff of entities whose Integrated or Financial Reports are produced using Braiins

members of an Accounting Practice using Braiins

investors, researchers, financial analysts, shareholders, creditors, banks, debenture holders, actual and potential investors etc.

regulatory authorities

To obtain via use of the SIR (Sematic Integrated Reporting) capability of Braiins:

Easy to use, interactive, semantic reports for review and analysis of an entity i.e. querying its data and presenting the results in report or graphical form

Review and analyse an entity including comparison versus other entities in a group, including by KPI (Key Performance Indicators), with specific or additional indicators being definable

As above plus comparison versus other entities that are clients of the same accounting practice, if Braiins is being used by a practice, using the public data of public entities, or data of private entities which have authorised their data to be used for practice anonymous comparative purposes in return for being able to see comparative data

As above plus comparison versus other entities processed via Braiins (any country, any group, any accounting practice, any taxonomy i.e. large numbers of entities as Braiins usage grows), using the public data of public entities, or data of private entities which have authorised their data to be used for Braiins wide anonymous comparative purposes in return for being able to see comparative data

As above plus comparison versus public entities whose reports have not been produced via Braiins. This will involve Braiins running a service to import the public data of such entities into Braiins, and to keep updating that data as new public data is published.  
  
The data to be imported into Braiins will typically be in XBRL form, so that data will not be as complete or unambiguous as the data for entities processed via Braiins. Any errors or omissions detected on importing will be flagged. In some instances it may prove necessary to import data from paper or PDF reports, which would be even less coherent. Inadequacies in such data would be flagged.  
  
Still, once the public data, such as it is, is in Braiins in SIM form, Braiins’ SIR will provide better analysis and reporting on it than would be available by looking at the source data via normal means.  
  
As Braiins adds countries (jurisdictions), taxonomies, and languages, the service to import public data will continue to expand and in time allow analysis and comparison versus most public companies in the world.

With  
  
access controls where applicable so that only public or authorised data is accessible.

## Networking via the Braiins Community

In its Networking role, Braiins is for people interested in making and fostering business and organisation connections. Networking in other words.

As Braiins grows, both through direct use for the production of Integrated/Financial Reports, and via the import of public data for its Analysis role, the Braiins Community (the entities in the Braiins database) will become large. So too will the volume of financial and “integrated” data, and the number of people in the system become large.

The goal will be to make the Braiins Community database the largest, most well organised, and most accessible business/organisation database in the world.

LinkedIn.com is doing well with a mid 2013 valuation of its so called semi-structured data of $20 billion, but Braiins will offer more - structured business data. Perhaps a collaboration or JV with LinkedIn or other social network will become a feasible way to develop the Connecting/networking potential that Braiins can offer its clients.

## In Total

Braiins is being built to transform Integrated/Financial Reporting by delivering **Error! Reference source not found.**.

We know of no other product or system with the same remit, or anything close.

We expect a chalk and cheese difference between Braiins and other systems.

Thus we believe that it will be Braiins which can make Integrated Reporting an easy, practical, and natural reality for organisations, thereby providing significant value, and as a result becoming the default option, the world-wide standard.

This will make Braiins.com the world’s go-to place for the production of Integrated/Financial Reports; for accessing and analysing Integrated/Financial Reports (whether produced via Braiins or not); for business/organisation research; and for business/organisation networking.

# Product Scope

## Key Concepts

The key concepts involved in reaching the Braiins Vision are:

1. Complete re-think of the Integrated/Financial reporting process to take account of changing needs and means, and meet higher expectations while eliminating complexity as seen by a user, with Braiins handling the heavy lifting unobtrusively and automatically. This will reverse the trend of recent decades towards ever more complexity.  
     
   Fundamental to this are adhering to [Occam's Razor](http://en.wikipedia.org/wiki/Occam%27s_razor) (KISS) Principles and Albert Einstein’s dictum “Make everything as simple as possible, but not simpler” [to get the job done properly].
2. Elimination of duplicated data, effort and potential errors so that companies or groups operating in multiple countries/jurisdictions can re-use common data to generate accounts for each different set of statements/reporting standards/taxonomies.
3. Elimination of errors from lack of control over a mishmash of data from various sources.
4. Semantic focus – knowledge rather than just data
5. Highest overall quality with continuous evolutionary improvement from a company focussed on Integrated/Financial Reporting alone, driven by people passionate about the role of IFR in the world.
6. Cloud based to provide accessibility, interconnectivity, reliability, pay as you go cash flow flexibility, development continuity, and no hassle updating, all with no lock in either financially or for data.
7. Open and flexible both for input and output as HTML, semantic HTML, XBRL, iXBRL, FTP, and open data formats
8. Speed: Report generation is remarkably fast thanks to the Braiins design, coding, and servers. Braiins handles all the sophistication described here yet still spits out a 50 page set of accounts in under a quarter of a second, effectively on demand, allowing users to focus to completing the job without being distracted by the “coffee break” syndrome of some systems due to the wait for accounts to re-generate after an edit.  
     
   Client operations in the browser are snappy (and “nice”) too thanks to the use of HTML5 and local storage, using JavaScript and cross-browser, cross-platform libraries.
9. Finesse: Braiins is generates good, compliant non-verbose HTML with CSS3 to add customisable style and class to the accounts, with all of this optionally carried across to FTP documents
10. Principle of fully explicit relationships – if one piece of information is related to other pieces of information then their full relationship to each other is declared and controlled within the program.
11. Making XBRL core to the program rather than a “tagged” piece of information attached to a conventional fixed style report. This is part of why Braiins can provide flexible, inter-active, user definable report views.
12. Making XBRL output for regulatory or other requirements easy without any knowledge of XBRL details, or need to descend to things like XBRL manual tagging.
13. Creating, storing and organising all data in a standardised form for cross entity/jurisdiction compatibility via SIM (Standardised Information Model) with access to that data via SIR (Semantic Integrated Reporting). The SIR-SIM combination is potentially a unified financial reporting system for “everything”.  
      
    The development and use of SIR-SIM enables Braiins to access financial information from virtually any computerised accounting system, and output across multiple regulatory jurisdictions even for one Entity or Group from one set of raw data.

The final point, the “iceberg beneath the water” (SIR-SIM), is the truly revolutionary aspect of Braiins and a major part of all the other concepts being realised.

## What Braiins Is Not

Braiins is not a general or management accounting system i.e. it is not intended for sales ledger, stock ledger, VAT/GST, payroll etc. processing.

Rather it works with such systems to specialise in the Integrated/Financial Reporting (IFR) annual or periodic (usually quarterly) “end product”, business reports, ad hoc analysis/querying of IFR data, and networking related to such data.

Accordingly, annual and optionally periodic data is stored, and kept indefinitely, but Braiins does not cater for cents/pence. Money values are stored as integer values, whether shown in reports in units, thousands or millions.

## Braiins and XBRL

Braiins is not a direct replacement for or alternative to XBRL. Braiins works with XBRL. Charles Hoffman, the “father” of XBRL, and the hundreds or thousands of people around the world who have worked on XBRL Taxonomies and on fostering the adoption of XBRL have done sterling work. XBRL is well on its way towards ubiquity as a result of their good efforts.

Whilst we see that XBRL has contributed a lot, and will continue to do so, in our view it should be more of a behind the scenes technology, like databases say, which an accountant or business person should not need to know about in detail if his system is up to the task. XBRL can become very complicated. In our view the expectation of recent years that all accountants should become XBRL literate is unnecessary and misguided. In our opinion the software should do all the XBRL work for a business person or an accountant in business or practice.

The hope that software would do the work was mentioned by Hoffman and van Egmond in their definitive 381 page work [Digital Financial Reporting Using an XBRL-based Model](http://www.xbrlsite.com/DigitalFinancialReporting/Book/DigitalFinancialReporting-2012-09-30.pdf) when they said in section “4.13. XBRL is only one of many digital financial report technical syntaxes” that “As software improves more and more information in this document will become obsolete, complexity being absorbed by software applications.” Braiins does that.

Thus Braiins presents everything in accounting and business-speak with nary a mention of XBRL, doing everything in the background to automatically handle the XBRL work. If we have been able to achieve this, it is because we have been able to see further thanks to standing on the shoulders of giants, to quote Isaac Newton. We acknowledge the debt that Braiins and its concepts owe to XBRL.

# Key Technical Features

## Standardised Information Model (SIM)

For full details see Appendix 1 Standardised Information Model (SIM).

No matter what the source, format or method of entry, all data held in Braiins is stored as SIM (Standardised Information Model) data, which is semantic data structured for the Integrated/Financial Reporting purpose, normalised so that it is not in general particular to a specific taxonomy, jurisdiction, or entity type. (Some very special cases e.g. if there was such a thing as a requirement to report on Guinness entertainment expense in Ireland, can be defined for handling within SIM as exceptions.)

So what enters Braiins as piecemeal data is transformed into structured semantic information.

This means that all information is coherent, holistic, comparable and even global.

Braiins Report Objects (Bros) underlie SIM and give it much of its power. Only about 1,000 Bros are needed to hold all SIM data for any entity. As an example, just one Bro (the PPE Bro) holds all data for all Property Plant & Equipment assets. The 1,000 Bros have names and are organised in a tree structure for easy navigation. For details of Bros and a discussion of the advantages of Bros versus the possible alternatives see SIM’s Better Structure within Appendix 1.

**Data Input**

**Multiple Data Sources**

Braiins takes data into SIM from multiple sources:

* Entity General Ledger(s) as a TB in CSV or other open export format, or as a cloud data feed, or in some application specific format which Braiins knows about and can translate
* Spreadsheets
* Direct user input
* Discrete data subsets e.g. disclosure schedules, tables, graphs in various formats such as CSV
* XBRL reports e.g. when importing published XBRL data for entities not processed via Braiins

Preservation of Source Data Detail

Conventional FAP (Financial Accounts Production) programs require information to be contorted, truncated and split up to fit in with the way they work. This increases the processing time, learning obligation, risk of errors, loss of veracity and detail.

Braiins takes an entity’s information on board in the most holistic way possible, avoiding all the above problems, by mapping the source entity’s General Ledger(s) or Excel spreadsheet data to SIM structured data, preserving the source data detail in the process.

To assist in organising or sorting out the source data which often is not as well structured, or as clear as SIM is, the Braiins import and data entry routines allow for:

* Incremental imports
* Partial imports
* Varying levels of detail e.g. Summary followed by and reconciled with Detailed

**Data Organisation**

The data is organised by:

* DataSet – a group or set of data
* Period without any roll forward procedures as SIM handles this automatically and dynamically with start (opening) balances derived from prior period end (closing) balances. Thus PPAs ripple through automatically, though with a record of their effects, so that changes can be highlighted.
* Journal – one “posting”
* Type (Double entry, PPA, cash/non-cash, schedule, disclosure, table, chart, dynamic e.g. tax provisions)
* Jurisdiction if applicable

**Dynamic Data**

As indicated under Data Organisation above, data can be defined to be “dynamic’, which means that it is only “posted” (processed/included in balances and totals) dynamically or in real time i.e. at the instant it is required for the particular search or report requested. Dynamic data can be used for such things as

* Different asset valuation bases
* Different liability risk assessments
* R&D grant estimates ahead of approval
* Tax provisions or allowable/disallowable status
* Data applicable to one Taxonomy or jurisdiction but not others that might be used for searches/reports

**Validation**

Data can be assembled piecemeal but is fully validated for completeness and accuracy before any report construction is undertaken. The construction methods mean that:

* All Ledger information confirms to Double Entry principles
* Detailed information is always in accordance with summary information
* Completeness; that if an item exists in one then place, then it exists in all required places
* Correctness; adheres to the appropriate characteristics and properties.
* Consistency; proper roll forward and roll up facilities within and between periods.
* Accuracy ; no loss of precision or detail

## Semantic Integrated Reporting (SIR)

Semantic Integrated Reporting (SIR) is the part of Braiins which uses the SIM data to:

* Generate reports in plain HTML, sematic HTML, iXBRL, XBRL, PDF, or open export formats
* Provide consistency checks beyond the input validation described above
* Provide interactive search, review, and comparison abilities including across entities

Producing integrated/financial reports with correct, validated content for a target taxonomy in the desired presentation style that is paginated and cross referenced, and now also in iXBRL, can become incredibly complicated.

The charts of accounts and formats which specify the output report structure, content, and style quickly become larger and more complicated than the program itself. They consequently consume ever increasing resources, both from the supplying software house and the end user if they have done any customisation.

Braiins keeps this potential mess more under control than ever before thanks to SIM building in power and taxonomy knowledge (control) at the lowest levels, so that the high level reporting via SIR can be simpler, more intuitive, and less prone to error with regulatory change.

### Personalised Access with Control

Each user of SIR has their particular interests and information they are seeking.

For example:

* Conventional style for the Regulatory Authorities or Shareholders
* Liquidity and Risk based analysis for actual or potential lenders such as Banks.
* Performance orientated view for Financial Analysts
* Detailed Asset views for aiding Stewardship.
* In short, totally customisable, whether extracts or complete reports, to best suit the purpose and interest of each and any information user.

Even within these groups there will be a wide variation in specific interests, levels of detail required or accounting knowledge. So one technically orientated major shareholder might prefer to have everything in detail, another shareholder might just want to see some key summaries, preferably using pictures more than words.

SIR caters for such nuances, with users grouped as follows:

#### Internal Users

* Officers
* Management
* Accounting department
* Other staff

#### External Users

* Shareholders
* Potential investors
* Creditors
* Banks and debenture holders
* Financial Analysts
* Regulatory Authorities

This does not mean that any users can see more than they should as non-public content is controlled by the publisher, whether just the minimum legal disclosures or augmented with additional voluntary information.

The gradation in access is described in The Braiins Product and Community - Review and Analysis of Integrated or Financial Report Data.

## Reporting

The SIR report generator can produce any desired report as HTML, sematic HMTL, iXBRL, XBRL, PDF, or in open export formats.

The report generator is powerful yet easier to use than others because it works with SIM and SIM’s Bros that already have performed many of the required summations, and which know where they should or should not be used, because of their inbuilt knowledge e.g. a Revenue Bro could not be wrongly used in a Balance Sheet report. It is also fast, very fast. (Report formats are compiled into PHP code that runs on the server in native mode like any other program.)

Restated figures are kept track of so that every value in the comparatives of a set of accounts that is affected by restatements can be shown in a different style for example.

Schedule tables for notes fall out easily.

Graphs and images can be embedded.

**Interactive and Dynamic Reports**

Uniquely to Braiins and SIR-SIM, reports can be interactive and dynamic, with selections available according to the data itself e.g. whether dynamic type data has been imported/entered or not, whether multiple taxonomies/jurisdictions have been defined, and by type of related party.

Thus users can see whatever they want, however they want. Any user can have any style and amount of content within privacy limits where applicable.

Braiins plus SIR-SIM release users from the limitations of the static paper based single style report.

#### XBRL Reports

For XBRL reports SIM data is mapped (converted) to the target XBRL taxonomy, based on the knowledge embedded within SIM, so giving the best possible XBRL tagging, unrelated to how or where the item is used in an XBRL report. (Information in XBRL form is created direct from the SIM database, not after the information has been assembled in a set order or as an adjunct to a conventional report generator.)

The Braiins process of data to SIM to XBRL avoids lock-in to any one XBRL Taxonomy or XBRL construction model which are almost as numerous and varied as the Taxonomies themselves.

### Consistency Checks

As has been mentioned, SIM starts the validation process by controlling what can be entered where, with checks defined at the Bro level.

Further, broader, knowledge based consistency checks are performed using the report generator, which has access to all the data via SIM plus any required degree of logic and programming. A person writing validation or consistency check formats does not need to be a programmer to do this, however, as formats can use functions written by Braiins programmers to handle the IT stuff.

Because report generator formats are compiled to PHP code, they can use functions written in PHP code. Creating and adding additional PHP functions to the library of functions for use in validation formats is easy and quick for Braiins programmers. The library of such functions will become extensive and powerful, so enabling the validation and data consistency checks to also be extensive.

### Search, Analyse and Compare Data

SIR can search SIM data on a plethora of bases. Because we are looking at information, not data, the searches can be much more rigorous, meaningful and intuitive.

* Searches within and across Entities
* By related party
* By periods including prior years
* By item types e.g. DE journal, schedule, PPA
* By data type e.g. money, shares, text …
* By description (free text or prompted)
* By location in the SIM tree e.g. PPE
* By report target location e.g. BS or Directors’ Report
* By date of the item if it is dated
* By person who imported/entered/edited it
* By date of import/entry/edit
* By XBRL concept
* By any combination of the above.

The report generator can be used to generate search, analysis and comparison reports.

# The Result

The end result of the Braiins re-think is Integrated/Financial Reporting as it can and should be in the cloud computing age, which will empower Accountants to save the world.

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17 July 2017

# Conclusion

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# Standardised Information Model (SIM)

Braiins organises and stores all its data using the Standardised Information Model (SIM) which Braiins developed specifically for reporting use.

## SIM’s Better Structure

Conventional Financial Reporting (FR) programs not built to use the SEA++ API take the various components – data input, data import, GL codes, tables and schedules – then via a report generator for html or (i)XBRL or Word output allow a user to assemble each entity’s financial reports on in-house computers, or via cloud services.

In the 40 years since FR programs started to appear (HAPAS, HArtley Professional Accounting System launched in 1975 being one of the first), the accounting and IT worlds have changed dramatically. It is time that FR concepts did also.

FR program developers face the question of how to organise the data, which typically involves a Chart of Accounts (CoA) in some shape or form. Three very different ways are:

* Try to make the Chart(s) so comprehensive that they have a code or multi-level sub code for every possible piece of accounting and disclosure information, both double entry, and schedule in nature, which could ever be required. This can mean having multiple Charts according to the target taxonomy, jurisdiction, and entity type, with each running to many thousands of Codes. This becomes a nightmare for all concerned, especially if additional disclosure requirements come along which don’t fit the coding structure plan, as has happened all too often.  
    
  One attempt at developing a new chart targeting IFRS contains 35,000 accounts, but even that monster just scratches the surface, as the theoretical number of variations via the IFRS XBRL Taxonomy runs into the hundreds of millions.
* Dispense with an internal CoA in the FR system and link information directly from the entity’s own GL CoA, then add schedules produced in Excel and/or Word.  
    
  This approach has its niceties, and demonstrates well, but has problems due to entity GL variations, and the complete lack of any structure for the schedule information, meaning that much control, logic and accounting integrity is thrown away with the internal CoA.
* The advent of XBRL Taxonomies was initially seen by some as the way out of the mire, by using the XBRL concept codes (names) directly as the CoA codes, which would then make the generation of XBRL financial statements easy.  
    
  Unfortunately, things didn’t quite work out as hoped, as XBRL is designed to describe the result (the financial statements), not the input data. Often there is no direct one to one match between an entity’s GL and the XBRL Taxonomy. XBRL Taxonomies do not use double entry concepts or control accounts. Thus, attempting to transfer data into an XBRL code based FR system from an entity’s GL would require some operations similar to the manual XBRL tagging that people have to resort to when converting Word or other non-XBRL accounts to XBRL. Not good.  
    
  As Robert Mladek of IFRS-GAAP.com [says](http://www.ifrs-gaap.com/en/IFRS-GAAP-chart-of-accounts/) “XBRL is a reporting language, not a chart of accounts substitute.”  
    
  Charles Hoffman has wondered why accounting software does not use XBRL directly. This would seem to be why. As far as we know, the apparently tempting option of a pure XBRL “chart” is not used by any real world FR system.

FR systems, that have evolved from last century’s simple 3 then 5 digit code charts, have tended to go the first way, with ever more complicated and messy charts.

The trend in the market for newer systems seems to be towards the second more flexible “marketing driven” option, as the first all-encompassing chart is perceived as being too messy, too difficult, and not “user friendly”.

The SEA++ Braiins fresh start has allowed a different, and we believe, smarter approach.

The Standardised Information Model (SIM) equivalent of a CoA maintains all the accounting details and integrity in a tree structure of only one thousand “account” codes, which have names to make then easy remember or search for. The names are similar to XBRL names but tend to be shorter, far fewer in number, and are intended for standardised cross taxonomy/jurisdiction/entity type use.



## Braiins Report Objects or BROs

The "accounts" themselves are actually smart objects called BROs or Braiins Report Objects which embody:

* the knowledge of what sort of data they hold – money (by currency, or cryptocurrency), integer number, number with decimal fraction, text, shares, percentage, ratio like 77:81 for a share split, image, video, or attachment
* whether the data is SEA (blockchain single entry with internal DE), DE (posting to the BRO has to be part of a balancing double entry journal) or schedule single entry in nature
* what sums (additions) should be performed with numerical data if any
* what properties (next section) can be used to further describe any data item
* what additional checks if any should be performed with the data
* how to convert the data for export and output
* how to compare the data
* how to convert that data to XBRL output.

One BRO can hold lots of data. BROs at the base or core of Braiins prevent many errors ever getting started. Higher level checks are performed using a version of the Braiins report generator, as a kind of super formula linkbase, but one which can be easily extended and augmented for various entity types and taxonomies/jurisdictions.

## Properties

In addition to its BRO code in the tree, any item of financial or other information can be further described if desired by adding to it as many properties as are needed to fully describe that piece of information, using properties permitted for that BRO. The concept is similar to the tagging of blog post and other web pages so that web search engines can find and organise the information. SIM does the same for the data in Braiins, but in a controlled way, so that many possible errors are eliminated right at the start.

Properties are a bit like XBRL dimensions, but both broader and simpler. Properties are grouped into Folios, a bit like XBRL hypercubes. (Different names have been used deliberately to avoid confusion.)

Properties describe a value to any desired degree of detail. SIM includes dynamic properties e.g. Officer.BondJ or Sales, Asia, HK, Entity.WongAndCo. In this way the short and simple "chart of accounts" can handle any degree of detail or complexity. People, Entity, Address, and Contact details are held in the database just once but can be referenced as properties, with any edits to the DB values flowing through to wherever that property is used.

The property system is flexible and open ended e.g. there is no 40 Directors limit as in UK-GAAP and UK-IFRS, or for anything else. (The limits still apply, of course, when outputting XBRL for a given taxonomy, but there are no limits within SIM itself.)

There are two forms of dynamic property to replace XBRL tuples or typed dimensions and the X for extensibility of XBRL. There is no need to start trying to think in terms of n dimensional hypercubes (huh?) as with XBRL. Just attach whatever properties are needed or desired to describe a particular value (within controlled limits as per the BRO's knowledge), and Braiins via SIM sorts it all out.

In short, Braiins and SIM are “properties all the way”.

An example should make it clear.

BS.Assets.PPE could be the code for the Property Plant and Equipment assets BRO. (Tangible Fixed Assets in older terminology.) That’s it - one BRO (one code) for all PPE assets.

A particular asset class could be tagged as ‘Land and Buildings’, and a transaction affecting it tagged as an Acquisition or a Disposal, or Depreciation or Impairment etc. SIM knows how these relate to one another and which combinations are valid. SIM automatically performs Start/End (Opening/Closing) calculations using movement postings. SIM automatically sums the PPE assets by class (tag group), and for all PPE assets. A TB can show full details, intermediate sums, or just the total sums e.g. all PPE Assets. Similarly a SIR report (and the report writer) does not need to be concerned about summing PPE assets or groups of them. That all falls out via the tag groups used.

SIM would prevent a PPE entry being tagged as something silly for a PPE Asset like ‘Special Purpose Entity’. (XBRL tagging systems cannot prevent all such silly postings due to the broader ways in which XBRL Taxonomies are defined, so ‘valid’ XBRL can sometimes be accounting nonsense. SIM keeps the lid on that can of worms.)

## SIM Breadth and Depth

Over the last few decades accounting standards have become ever more complicated, and despite the best efforts of the IASB with IFRS, there are still international/jurisdictional variations in effect, and this is likely to remain the case. Most notably, US GAAP is not likely to go away any time soon. SIM is designed to cope with this, whereas other structures are not.

SIM’s data types and dynamic properties (tags) make it possible to handle information relating to different

* Taxonomies (standards)
* Jurisdictions
* Industries
* Entity legal status
* Information type

without having to duplicate common data or structures.

Whereas an entity's general ledgers are controlled double entry environments, the financial statement reporting complexities mean that many entities, especially larger ones, use a multitude of Excel spreadsheets and Word documents that are pulled together to produce the financial statements. This has led to numerous errors, some quite serious. This complicated area is often referred to as Record to Report. SIM brings that whole situation back under control, without inhibiting flexibility, or making things complicated. In fact, it actually makes it all easier.

If there was interest from the financial reporting community, we would open source SIM which might be viewed as the basis for a possible global standard in much the same way as SBR and XBRL-GL. At all times we remain open to working with XBRL.org, regulatory bodies, and standards bodies, in addition to our customers to see Braiins and Financial Reporting continue to advance.

## SIM and XBRL

XBRL adoption is widespread throughout the world. So Braiins must and does speak XBRL.

Given that, why SIM?

The SIM concepts are not incompatible with XBRL, let alone competing. On the contrary, they are derived from concepts used in XBRL taxonomies. We have just refined and extended them, and applied them to the very core of the program, rather than leave them as extended add-ins as is done by many conventional accounts production programs. In short, we have taken XBRL to its financial reporting logical conclusion.

The aims of XBRL are laudable: machine readable accounting/business data that is standardised and comparable across entities. (No XBRL system yet provides for cross jurisdictional comparisons.)

The originators of XBRL and all those who have much put much effort into it over the years are to be congratulated on their success.

However, in practice XBRL has become complicated and intimidating. In part this is the "arrow in the back" consequences of XBRL evolving on the fly e.g. tuples came and went, the calculation linkbase is being replaced by the formula linkbase before many have even caught up with the calculation linkbase; the table linkbase has arrived, and so on. And how many accountants even know what a linkbase is anyway? The Braiins contention is that they do not need to know.

What started barely 15 years ago with the intent of providing a universal business/financial language has now become diverse and fragmented. This is compounded by the difficulty in translating between the taxonomies.

XBRL Taxonomies can provide a measure of checking when the accounts are output in XBRL form via the Calculation and Formula linkbases, but not all Taxonomies make use of these facilities. The UK ones do not, for example. The UK regulatory authorities, and others, make the assumption that the systems used to generate the accounts provide accounting integrity. That was once the case in simpler days, but is no longer necessarily true. Bolting on XBRL to older systems designed for the pre XBRL world, the demand from marketing departments to allow editing on the face of the accounts, plus the widespread use of Excel and Word as "accounts generation" tools, mean data integrity and control has been lost. In most cases, complete nonsense can be entered, and even be verified as valid XBRL by XBRL gateways.

The common use of the X (eXtensible) feature of XBRL to add entity specific tags, especially in the US re US GAAP, has reduced the utility of XBRL data. Thus the data isn’t as comparable across entities or as “semantic” as is desirable.

So, in some respects, despite all the advances in computer power and sophistication, and the advent of XBRL, accounting and business reporting has gone backwards. Further, it appears to us that too much of the XBRL complexity intrudes on the accounting.

Braiins via SIM reverses these negative trends, while retaining the benefits of XBRL, so taking a giant leap forwards again, in a non-intimidating way. In fact Braiins is deceptively simple and easy. Accountants and business people can understand it without having to study a difficult 400 page book like "XBRL for Dummies" or wade through a 65 slide PowerPoint slide show on "How to Use Dimensions".

With SIM everything just works in a natural way, with clear choices at every step, and the XBRL “stuff” happens automatically in the background.

One approach to making use of XBRL and of coping with its complexities, is for accountants to study it. XBRL courses are available and accountants can become XBRL certified.

Braiins takes a different view and via SIM hides the XBRL detail, freeing the accountant to focus on the accounting and business insights, working just with natural, guided inputs that make sense without any specific study of certification being needed beyond understand of the accounting principles and standards in use.

Any computer system tries to hide the XBRL details, but with varying degrees of success. At least one system even offers editing on the face accounts for both accounting/layout and XBRL. Awful! Many or most systems end up with some need for manual XBRL tagging.

Braiins and SIM go all the way – XBRL benefits retained with all XBRL detail and complexities hidden.

# The Technology

Braiins is built upon the following technologies and design decisions:

* Data - any and all data appropriate to wide ranging financial reporting:
* Data described, categorised, and made “intelligent” using SIM
* Data stored in Journals within DataSets
* Data is Integrated/Financial Reporting focussed i.e. it is NOT a complete transaction based ledger, but a record of the final balances and any edits made to them
* No limits by year i.e. data is kept until specifically deleted
* No limits on numbers e.g. of officers or subsidiaries
* Open ended number of periods per year, normally expected to be 4 for quarterly reporting, but could be more if the year end date changes, or if a monthly or other reporting period is required.
* Data exportable
* Data deleteable
* Data importable in various formats according to source, list will keep growing as needed
* Data types:
* GL data in whole dollars or pounds etc i.e. cents or pence are not stored
* Additional financial disclosure numeric or text data
* Non-financial ancillary environmental text or other data
* Optional related data dynamically (live, in real time) brought into play, or removed as desired according to the report being produced e.g. accounting information specific to corporation/income tax.  
    
  This kind of data is stored using DataSets and Journals with the SIM properties (tags) defining exactly what aspect the data applies to e.g. Income Tax Status  
   - Allowable (default)  
   - Disallowable  
    
  The types of data that is allowable or disallowable will vary from country to country, but is not related per se to a Regulatory Accounting Taxonomy. Braiins’ ability to work with different jurisdictions as well as different taxonomies allows it to cope with such differences dynamically i.e. without manual intervention or re-posting
* Data organised by Agent (Accountancy Practice) or Group, and any number of Entities within that Agent or Group.
* Entities, people, contacts, and addresses DB information are available to any entity of the Agent or Group, including being used to describe other data e.g. the remuneration of BondJames from Entity XYZCorp. This use of DB references to describe data is a part of SIM that is natural but powerful and not available in XBRL.
* SIM (Standardised Information Model) involves DB data, Folios, Properties, and Property Members (somewhat similar to XBRL Hypercubes, Dimensions, and Dimension Members but more flexible and natural with no need for a tuple equivalent and without limits as to numbers anywhere) to describe the data, and BROs (Braiins Report Objects) to store it, provide intelligence, and perform some automatic validation and processing
* SIR (Semantic Integrated Reporting) front end to SIM to provide the Braiins Report Generator, plus Analysis and Validation tools. Report Generator formats are compiled into PHP code as part of the process by which Braiins deliver its speed.  
    
  SIR’s reports can be HTML, semantic HTML, iXBRL, XBRL, PDF, or open data formats.  
    
  SIR generates good, compliant non-verbose HTML with CSS3 to add customisable style and class to the accounts, with all of this optionally carried across to FTP documents.
* Cloud based using UK servers initially, later others but NOT USA ones
* MySQL database running on a cluster of Linux servers, to become a Hadoop cluster as size increases
* PHP 5 on the servers, optimised and compiled
* OOP (Object Oriented Programming) built in to the heart of Braiins to implement SIM and in particular BROs within SIM
* XBRL taxonomies which are published in XML form (103,000 nodes of XML for UK-IFRS), are converted from the XML to MySQL DB form for use by Braiins, then optimised again for SIR-SIM use as pure PHP code as another aspect of providing the Braiins speed
* Client:
* Uses
* HTML5 – the latest web standard
* HTML5 local storage feature as part of providing Braiins speed and responsiveness
* jQuery cross browser JavaScript library
* Wijmo cross platform components library
* Needs to be an internet connected device with a reasonable screen form factor able to run an HTML5 capable browser e.g. Chrome, FireFox or Internet Explorer 10. (Not IE before 10.) All modern PCs, laptops, plus most tablets and phablets are good.