

BUSINESS INTELLIGENCE STRATEGY

A Business Intelligence Strategy for harnessing and exploiting the data in the University's central business systems, external sources including social media, regulatory data and survey data in order to secure competitive advantage.

*Planning &
Business
Intelligence*

IT Services

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Executive Summary

What are we trying to achieve?

Enhancing the Business Intelligence capability of the University will ensure that SMG and staff have a clear and straightforward insight into both internal and external data, have top quality management and performance information and are able to better forecast future trends through the deployment of predictive analytics. This can be delivered through our IT networks to PCs, laptops, tablets and smartphones. In short, we will access, collate and combine our corporate information in new ways to improve the way we work.

Timely access to trusted data will inform actionable decision making to improve alignment with University strategy, improve efficiencies and effectiveness, reduce operational costs, ensure statutory compliance and minimise risk. The key to BI success at UOG is achieving ease of use of BI reporting systems to ensure widespread acceptance and end user self-service. This will be achieved by the provision of delivered standard reporting at a detailed level as well as the ability to generate bespoke analyses.

What is Business Intelligence?

Business Intelligence (BI) is a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information which can be used to enable more effective strategic, tactical, and operational insights and decision-making. Its end result should be to transform the way information is used to assist the University in moving forward. Within this are included a variety of technologies, including data quality and master data management.

BI can be applied to the following purposes –

- Measurement – creating a hierarchy of KPIs;
- Benchmarking both within and outwith the University;
- Analytics that enable optimal decision making and business knowledge discovery including data mining, statistical analysis, and predictive analytics and modelling;
- Data Visualisation – presenting the university data to the full range of staff in a clear and effective manner, enhancing data quality, decision making and knowledge;

Currently the University is in an extremely weak position compared with our competitors in the education sector and the commercial world in terms of understanding where we are, how we got here and the impact of where we want to go in the future.

Consultation with a range of colleagues from across campus has reinforced the widespread support for BI. They see access to enhanced management information and advanced analytics as essential and the logical next step in our desire to be more competitive.

Intelligence and Analytics:

| BI & Analytics | Business Intelligence | Business Analytics |
|-------------------------------|---|--|
| Answers the questions: | What happened? When? Who? How many? | Why did it happen? Could / will it happen again? What will happen if we change xyz? What else does the data tell us that we never thought to ask? |
| Includes: | Reporting (KPIs, metrics) Automated Monitoring /Alerting (thresholds) Dashboards Scorecards OLAP (Cubes, Slice & Dice, Drilling) Ad hoc query | Statistical/Quantitative Analysis Data Mining Predictive Modelling Behavioural Modelling Multi-variable testing |

Proposal

The proposal is that the University adopts a two-pronged approach to delivering BI.

Firstly, we will consolidate our development and use of the data visualisation tool QlikView. There are now around 200 users across the university who are able to easily access current, interactive data, to course level, on students and surveys including some financial and staff data. This is transforming our ability at all levels to make decisions on both operational and strategic activity.

Secondly, we will develop our analytics offering using IBM Cognos which the University recently bought for the Work Load Modelling Project. Cognos is a sophisticated analytical and modelling tool that will enable the University to produce a range of reports and analytics that can include forecasts (financial and student numbers), social networking analysis and a host of automatically delivered standard reports.

This proposal combining, QlikView and Cognos, will ensure that the University is well placed to make key decisions that will provide us with the ability to keep on top of our strategic plan, to develop new strategies to enhance our reputation and ensure we remain competitive in Scotland, the UK and internationally.

The views of Colleges and University Services

Through a series of meetings during October to December 2014, we met with all Colleges and various parts of University Services to discuss their views on and outputs from a BI strategy. The main outcomes were –

- Strong universal support for a BI Strategy and the perceived improvements in decision making and reducing the time wasted attempting to establish correct information associated with the adoption of such an approach
- Consistent request for the need to link improved data quality to the BI Strategy
- Universal confirmation of the need for a system of collating data from multiple corporate data sources that is defined and maintained to allow us to bring together multiple data elements into a rich data source that provides managers with the basis for making intelligent decisions
- Consistent agreement with the list of reports (Appendix 1) that the BI strategy should address, with a new Admissions Model that allows forecasting and scenario planning being the most popular report request from all the Colleges and various sections of University Services
- The need to persist with the College requirements for financial autonomy, but coupled with a need for all Colleges and University Services to follow a consistent set of processes that remove the option for doing things differently and thus improve data quality and cost of maintenance of our data.
- Persistent view that improved management information from multiple sources would provide for significant staff time savings that is currently wasted establishing the data needed across the spectrum of College activity to allow decisions to be made; with that time being put to higher value activity that will be of benefit to the College / University.

Investment Required

Additional licenses, hardware and resources will be required as summarised below.

| | 2014 / 15 | 2015 / 16 | 2016 / 17 |
|-----------------------------|-----------------|-----------------|-----------------|
| Licenses | £24,000 | £40,000 | £40,000 |
| Software maintenance | £5,280 | £14,080 | £22,880 |
| Hardware | £20,000 | £40,000 | £30,000 |
| Hardware maintenance | £4,400 | £13,200 | £21,200 |
| Staff | £92,000 | £260,000 | £316,000 |
| Consultancy | £37,500 | £47,700 | £25,000 |
| Training | £10,000 | £25,000 | £15,000 |
| Total | £193,180 | £439,980 | £470,080 |

The resources requested in the above table are in addition to specialist staff already within IT Services, Planning & BI and Finance.

Indicative Savings

In discussions with the Colleges regarding the benefits of a proper BI strategy and the ready availability of management information, the College of Science and Engineering gave an estimate of each of their Heads of School Administration spending up to 1 day per week

trying to establish information that they need to allow them or others make decisions. This would in effect save the College of Science and Engineering 1 FTE or £50k per annum in wasted time, allowing the staff to be more productive in other areas. For all 4 Colleges and University Services, this could make a saving of at least £250k per annum.

Additional benefits will come in the form of the ability to undertake various modelling scenarios for areas that are too complex using existing tools, for instance our Admissions Model currently only allows us to model for one year in advance. Allowing us to model admissions for a number of years ahead will greatly reduce the need to pay the financial fines from the SFC for student over recruitment we have seen in the last 2 years. Combining disparate datasets will allow us to make more intelligent decisions and behavioural modelling of our students will be possible using multiple student data sources.

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What is Business Intelligence?

Business Intelligence in the Higher Education Sector



1. The above image outlines the 4 main stages of BI and how it allows better performance management. The HEI sector is currently transforming the way it harnesses and exploits the data available. Universities such as Warwick, Nottingham, Imperial, Manchester, Liverpool and others have been leading the way for the last 8 years in reaping the benefits of Business Intelligence.

They have moved beyond:

- Basic data presentation and analysis;
- The provision of historical trend data to all staff;
- Short term student number forecasts;
- Excel for everything.

Towards:

- Analysing competitors' HESA/UCAS/Research/Survey/League Table data to identify strengths and weaknesses to exploit;
 - Identifying gaps in admissions markets e.g. where do local pupils go and what courses are popular elsewhere;
 - Performing detailed what-if scenarios in terms of government student funding, the impact of different student recruitment strategies etc.
2. In short, these institutions are moving beyond understanding their own historical and current data, towards identifying opportunities to exploit and threats to counter. The University of Glasgow (UOG) is still at the stage of developing its historical data analyses and trying to make sense of the data of its current students. By having a better understanding of their data and that of their competitors, institutions using BI will be at an advantage to us in terms of setting more informed targets, identifying trends in recruitment and identifying gaps in recruitment that they can exploit.

3. We have for the past 10 years invested heavily in updating a number of our corporate databases and now have Agresso, Core, MyCampus and Enlighten. The adoption of a Business Intelligence strategy coupled with a Data Quality strategy will allow us to combine data from various sources or analyses. Our corporate data is a valuable asset and BI is the key to optimise its potential. This will allow us to compete on a more level playing field with our competitors. At present we know our competitors are undertaking analyses of which students from which Schools have applied to them and not taken up a place or have not applied to them but have excellent qualifications. They are using this data to target better intake practices. This will improve their tariff, continuation and outcomes which will all help with their league tables position as well as improving the quality of the experience for all at their university.

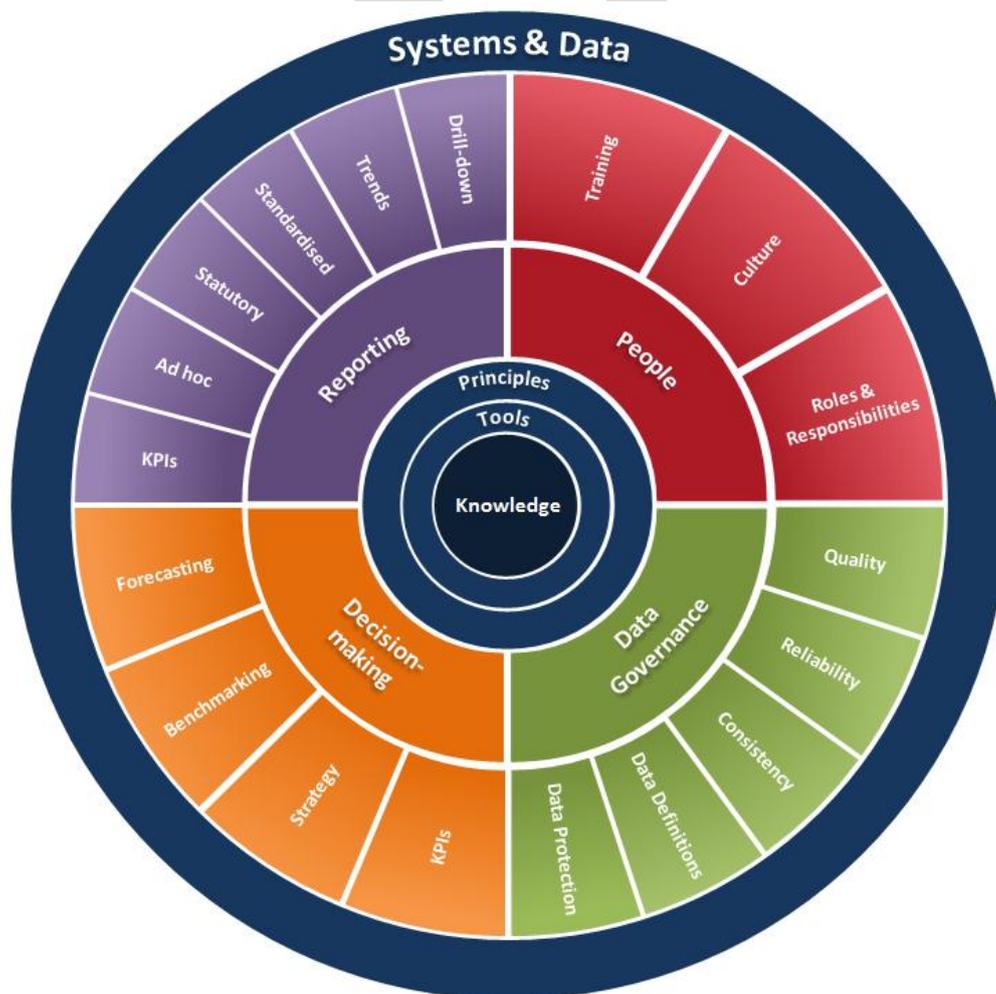
Business Intelligence

4. Business Intelligence (BI) is a broad category of software applications and technologies used to gather, store, analyse, and access data to help organisations make better business decisions. BI capabilities have progressed significantly allowing easier access and consolidation of data from multiple sources (internal and external) and delivery of flexible analytical tools to staff at all levels in organisations.
5. BI is recognised as one of the top concerns for industry leaders and is consistently high on corporate agendas. The time is right for the University to develop its BI capability, in order to benefit from the investment in core software applications.
6. By providing timely access to trusted information across functions and departments for actionable insight and fact-based decision making, the business intelligence initiative will help inform long-term planning and execution of the University strategy and support UOG's strategic goals of excellence in education, excellence in research and world-class service to all university stakeholders (students, staff, alumni and external agencies).
7. The key to BI success at UOG is achieving ease of use to ensure widespread acceptance and end user self-service. This will be achieved by the provision of delivered standard reporting at a detailed level as well as the ability to generate bespoke analyses.

About the UOG Business Intelligence Approach

8. The proposed UOG Business Intelligence approach will ensure that the right information is available to the right decision makers at the right time and in the right context in order to drive the University forward and in particular support the Strategic Plan. This approach to BI will ensure:
 - A single authoritative, certified source of data;
 - Our objectives are informed by using BI bespoke to meeting that objective;
 - Effective data governance;
 - BI as a means of streamlining and increasing accuracy within data so that planning, forecasting and reporting mechanisms all link to the same certified data;
 - Standardisation and consistency in the University-wide data analysis and BI methodologies and tools.
9. The BI initiative will result in a number of benefits for our Colleges, Schools and Research Institutes (RIs) and will help to support the University's academic and administrative needs. The benefits include:

- Materially improved and easier analytics which will be clearer and more comprehensive;
 - Sector standard data visualisation – which will communicate clearly and effectively our data through interactive graphical means;
 - Flexible BI development capabilities, which will enable us to generate analyses and data to the wider UOG community more quickly;
 - Mobile BI that allows users to access BI content anytime, anywhere, from their home and mobile devices;
 - The option of a single, certified repository for BI data;
 - A framework for the management of role-driven access to data at the correct level.
10. BI is more than just Reporting (KPIs, metrics) and embraces automated monitoring / alerting (thresholds), dashboards, scorecards, OLAP (cubes, slice & dice, drilling), and ad hoc query. The Cognos toolset brings to the table statistical / quantitative analysis, data mining, predictive modelling, behavioural modelling and multi-variable testing
11. Appendix 2 contains a more detailed overview of our BI Programme and the diagram below illustrates the different components of Business Intelligence and provides the University of Glasgow with a proposed framework for developing its road map to Business Intelligence.



12. At its centre is our goal of the generation of knowledge that will improve decision making at all levels and provide a source of competitive advantage to the university.
13. Success across all areas requires a collaborative approach from across the University. The creation of a dedicated Data Quality Team has already enabled Planning & BI to make progress in the Data Governance quadrant. The major benefit of recent work with MVLS is that we have vastly improved the accuracy of our PGR dataset, the College are more familiar with the data and the need for accurate maintenance of the data and MVLS were able to submit a KTG application proving a PGR completion success rate of greater than 75%. All 4 Colleges have now embarked upon this same exercise. Now we need to engage with the wider University community and define a strategy to reach our knowledge target.
14. At present, much of our data analysis is retrospective, even historic, and we risk failing to spot very recent, current and emerging trends. The use of BI will enable more effective actions to be taken by managers, to improve in-year and future performance in the most critical areas. In addition to retrospective views of data there will be real-time views of current performance and there will also be forward-looking predictive analyses providing early warnings.
15. Ultimately, the reporting system will enable analyses across student, HR, finance and estate data. The reporting will be from a 'data warehouse' (or equivalent), which will contain cleansed and analysed data from the constituent databases, updated at defined intervals and include very tightly controlled data dictionaries and schemas.
16. The University is currently working with Cognos and QlikView as complementary tools to organise, transform and visualise our data.

Benefits of BI at the University

17. Through extensive discussions with the Colleges and University Services we have established a list of reports (see point Appendix 1 below) that the Colleges consider will provide much needed management information. All Colleges emphasised the need for an Admissions model that was capable of handling what-if scenarios and in driving targets and monitoring admissions against much more granular level than we currently have.
18. The Colleges emphasised the need for access to the data for all who require it. The benefits of having this new management information for decision making purposes will be maximised and will bring a change in culture towards the need for greater care and accuracy in capturing and maintaining our data (much of which is done within the Colleges). Staff would not fully grasp the importance of these elements if they did not have the ability to examine the data for themselves and understand the implications of inaccurate data resulting from their actions.
19. Appendix 1 describes a range of benefits that will arise as a result of a strategic BI programme and a few examples are summarised below. Even if there is only a modest positive impact the financial benefit to the University will significantly exceed the investment requested.
 - a) **Cross system analysis** – join up our key business systems and produce integrated analysis that enable us to make better decisions. For example, class profile data will provide teaching staff with additional information on the make-up of the students in their class allowing them to tailor their teaching, this will improve student experience

(NSS), pass rates, improved progression and Continuation and thus better league table performance;

- b) **One version of the truth** – consolidate the key data from all our business systems so that everyone has access to standard, reliable and comparable data and analysis. This will allow us to spend more time planning for improvement rather than discussing the quality of the data;
- c) **Forecast/projections** – project student numbers and financial data into the future – helps with resource and space planning. For example, a multiple year Student intake forecasting model will afford us many benefits including avoiding over-recruitment in areas we do not have the capacity, allow us to set targets at a far more granular level, improve the teaching experience, avoid the costs of double teaching, improve our NSS scores through happier students and all Plans can have a set target and are recruited to individually, thus balancing resource utilisation.
- d) **Strategic Plan** – monitor progress with the strategic plan and KPIs, thus helping ensure work is focussed on delivering the plan. We will be able to choose more sophisticated KPIs as a result of being able to combine different corporate datasets that we can subsequently monitor. We would aim to automate the generation of these monitoring reports so that Colleges could access them at any time.
- e) **Efficiency gains** – provide staff with the information they need at their fingertips – leading to the quicker production of reports and more accuracy and consistency. The College of Science and Engineering have estimated that they would save at least £50k per annum on not having to spend wasted time generating data from our systems;
- f) **Interactive research analysis** – provide analysis of areas such as grant income, funder data, papers and citations interactively by College/School/RI and staff members. A school or College profile could easily be built and accessed by management;
- g) **Competitor Analysis and Trends** – analyse enrolments, retention, progression, widening access, gender etc. – all at College, School and down to Course level. This work could also be undertaken on our competitors to better understand for example their recruitment strategies and target areas to allow us to counter their efforts. We will be able to target areas that should result in better qualified students at GU, that will in turn improve continuation and progression, the number of Firsts/2:1's awarded and thus our league table position. We will also be able to better understand what courses are becoming more popular / less popular thus informing the course we offer to attract students;
- h) **Communicate survey results** – present survey data consistently and interactively, conveying key messages up front and allowing staff to find answers to their own specific issues. This will allow subject level appreciation of what we do well and what needs to be improved, thus providing the ability to improve the student experience at GU which will feed into NSS results:
- i) **Space usage** – analyse current room usage and scenario planning of future requirements using intake forecasts and trend data. Making better use of the space resources we currently have will help inform our plans for the exploitation of the Western Infirmary site.

- j) **Reporting** – distribute routine reports across the entire organisation. Staff will have access to more reports that meet their specific needs on a routine basis. We will be able to combine data to create reports we currently do not have access to e.g. discount analysis reports at plan level. This will improve decision-making across the university and indirectly improve staff support.

Further detail is available at Appendix 1 with graphical examples at Appendix 3

Investment Required

20. Expanding the University's BI capabilities will require further investment. All costs detailed below are in addition to budgets already approved for Workload Modelling, Finance reporting and QlikView activities.
21. As the use of BI is expanded user numbers will inevitably rise and require additional Cognos and QlikView user licenses to be purchased. Both suppliers licensing models are based on the profile of the user and involve the purchase of a perpetual license and an annual maintenance fee effectively for each user. License costs range from £250 to £1,750 per user depending on the level of complexity of the role involved. Processor licenses are would also be required. Limited additional licenses will be required during the current financial year with growth commencing for the following two years before stabilising. It is assumed that in the first two years the University will rely on QlikView and Cognos. Additional tools such as IBM SPSS Modeller would require additional investment. Estimate of Licenses costs:
- 2014-15 - £24,000 plus 22% maintenance pa
2015-16 - £40,000 plus £22% maintenance pa
2016-17 - £40,000 plus £22% maintenance pa
22. Additional hardware will be required in the form of servers and storage:
- 2014 - 15 - £20,000 plus 22% maintenance pa
2015 - 16 - £40,000 plus 22% maintenance pa
2016 – 17 - £40,000 plus 22% maintenance pa
23. Staff resources will require to be increased. The Workload Modelling project has two IT Services staff plus two fixed term Cognos contractors. The fixed term contract positions would need to be made permanent in March / April 2016 to continue supporting Workload Modelling and future Cognos BI developments and an additional three Cognos specialist staff recruited as quickly as possible (£55k pa x 3) on a permanent basis.
- 2014 -15 – 4 new Grade 7 /8 (Mar – Jul). Total for 5 months £92,000
[i.e. 2 Cognos developers, 1 visualisation specialist and 1 TM1 modelling specialist]
- 2015 -16 – Above 4 positions (£55,000 x 4) = £220,000
Two fixed term from WLM budget to ITS (Mar – Jul) = £40,000
- 2016 – 17 Above positions on an annualised basis = £316,000
24. In addition to the above additional BI resources, existing staff members from Planning and BI, IT Services and Finance will form the remainder of the BI team. The BI

programme of work will be co-ordinated / led by Helen Macpherson from IT Services who has been leading the Workload Modelling Project. IT Services will provide a further BI developer, DBA and infrastructure resources. Finance team are training two Cognos developers. Planning and BI already have staff trained in developing QlikView. The cost of these resources is currently covered by existing salary budgets and are not included in the project costs.

25. As the University progressively increases the complexity of its analytical models it is expected that consultancy assistance will be required on an ad hoc basis. Approx 20 – 25 man days in the first year would be a reasonable estimate. In addition, the current Cognos consultancy supplier, Barrachd, has a number of Cognos based BI solutions which might allow the University to deliver comprehensive solutions to a number of these specific themes relatively quickly. There are also a number of QlikView solutions available that could also be implemented with little cost.

| Partcode | Module Description | Module Price | Implementation |
|----------|---|----------------|----------------|
| BarAA | Barrachd Student Application/Admissions | £5,000 | £8,500 |
| BarEN | Barrachd Student Enrolment | £5,000 | £8,500 |
| BarMA | Barrachd Student Module Analysis | £5,000 | £8,500 |
| BarRE | Barrachd Student Retention Analysis | £5,000 | £8,500 |
| BarNSS | Barrachd Student Satisfaction Analysis | £5,000 | £8,500 |
| BarDE | Barrachd Student Destination Analysis | £5,000 | £8,500 |
| BarLT | Barrachd Student League Tables | £5,000 | £8,500 |
| BarSD | Barrachd Student Strategic Dashboard | £5,000 | £8,500 |
| | TOTAL | £40,000 | £68,000 |

It is envisaged that the University will target two of the above modules in each of the first two years plus additional consultancy to support in house development.

2014 - 15 - £22,200 (2 modules) plus 15 days consultancy = £37,500

2015 - 16 - £22,200 (modules) plus 25 days consultancy = £47,700

2016 – 17 – 25 days consultancy = £25,000

26. Training will be required for existing staff (e.g. Planning & BI, HR, Finance, Colleges & IT Services:

2014-15 - £10,000

2015-16 - £25,000

27. Total investment required:

| | 2014 / 15 | 2015 / 16 | 2016 / 17 |
|-----------------------------|-----------------|-----------------|-----------------|
| Licenses | £24,000 | £40,000 | £40,000 |
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| Hardware | £20,000 | £40,000 | £30,000 |
| Hardware maintenance | £4,400 | £13,200 | £21,200 |
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| Training | £10,000 | £25,000 | £15,000 |
| Total | £193,180 | £439,980 | £470,080 |

Indicative Savings

28. In discussions with the Colleges regarding the benefits of a proper BI strategy and the ready availability of management information, the College of Science and Engineering gave an estimate of each of their Heads of School and College Administration spending up to 1 day per week trying to establish information that they need to allow them or others make decisions. This would in effect save the College of Science and Engineering 1 FTE or £50k per annum in wasted time, allowing the staff to be more productive in other areas. For all 4 Colleges and University Services, this could make an **estimated saving of at least £250k per annum.**
29. This does not take account of the opportunity cost of these staff spending time on more productive activity, with the College estimating that this would at least be of the same value again.
30. There are multiple layers of staff within the Colleges who are spending significant proportions of their time trying to establish management information for decision making purposes that could be made more readily available through a properly implemented BI Strategy.

Timeframes

31. As described above we have identified a variety of themes where BI will make a significant contribution to the delivery of appropriate analytics, visualisations and modelling. Although each would be different in terms of complexity it is expected that two themes per quarter could be addressed. This is, however, just a sample of themes that could be tackled and the Project Board would be responsible for selecting and prioritising.

Conclusion and Recommendation

32. Building upon our recently acquired knowledge of identifying where data resides, improving the quality of the data held in our corporate systems, our better understanding of College, School and RI data needs and how that is best presented, it is imperative that a Business Intelligence Strategy is adopted by the university.
33. Our adoption of QlikView has seen us make great strides in accessing, organising and understanding our data. Developing an advanced BI solution is essential to provide a significant step change in our ability to provide analyses across all of our corporate data sets with rigour and ease.
34. Colleges are convinced that the provision of accurate and accessible data will reduce the need for their Heads of School and College Administration to waste time trying to establish data.
35. For the university to gain full advantage from the data that it has available to it, to better understand its position and the opportunities it has available to it, it is recommended that the University adopt the following key approaches:
 - **The University commits the necessary resources to create a Business Intelligence model including a behavioural modelling, analytics data warehouse that is built specifically to allow integrated reporting directly from**

all of our Corporate Data sets utilising both QlikView and IBM Cognos. This is the key building block for us to exploit our corporate data sets and ensure we have a single, authoritative, certified source of data. The IT infrastructure resource requirements are contained in paragraphs 20-27.

- We adopt best practices and standards along with robust change management procedures;**
- We do not adopt a big bang approach – small iterative steps forward are proven to work much better;**
- Ensure that our the Data Quality Strategy continues to progress in conjunction with our BI Strategy and, along with our IT strategy support the University Strategic Plan;**
- A BI Implementation Group is established drawing on staff from IT Services, Finance, Planning and BI and various College/School/RI roles. This Implementation Group would be chaired by Prof Neal Juster as Executive Sponsor, supported by Helen McPherson as Project Manager and Martin Boyle on strategic direction and would develop and produce a detailed long term project plan that includes success criteria as well as sensible timescales. This group should report to IPSC / SMG.**

Appendix 1

List of analytics/reports agreed with Colleges as providing a material improvement in the decision making capabilities of the Colleges.

| Themes | Benefits | Improvements | Impact/ROI |
|---|---|--|---|
| Intake forecasts for UGs & PGT including home/RUK/EU | <ul style="list-style-type: none"> • Allows for better planning of teaching activity • Better room/space planning • Ensures no large over-recruitment pockets • Will allow the University to recruit to individual Plans | <ul style="list-style-type: none"> • Avoids unintended over-recruitment in areas that do not have the capacity. • Allows us to recruit at a more detailed level e.g. to individual plans • Will improve the teaching experience of students | <ul style="list-style-type: none"> • Avoid costs of double teaching. • Improved NSS scores • Colleges can recruit to fill all Plans thus improving utilisation of resources |
| Retention/continuation/ Progression and Widening Participation analysis? | <ul style="list-style-type: none"> • Staff will have access to data that will assist them target students likely to drop out • Provides management data to a wider audience and at a more detailed level on number and distribution of MD40 students that was previously not available • Establish where other universities are recruiting their MD40 students | <ul style="list-style-type: none"> • Staff will work to improve areas of poor Retention/Continuation • More students will progress • We will spend less effort trying to replace students we have not retained • Able to monitor MD40 students assisting us meet Scottish Government targets • Allows monitoring of MD40 student numbers • Allows us to monitor progress towards hitting Scottish Government Targets • Identify new areas for recruitment | <ul style="list-style-type: none"> • Lower recruitment costs • Better NSS • Better league table position as retention is our Achilles heel • Easier planning overall e.g. Colleges can plan lectures based on consistent student numbers • Ensures we retain our WP funding from Scottish Government • Assists us in minimising the chance for adverse publicity re not meeting targets by allowing us to monitor progress and intervene • Allows us to target interventions so as to avoid costs of students dropping out |

| | | | |
|---------------------------------|---|---|--|
| Course evaluation/ analysis? | <ul style="list-style-type: none"> Allows us to identify courses that are loss making or have high fail rates | <ul style="list-style-type: none"> We will better understand those courses that do not contribute financially It will allow academic colleagues to undertake more research rather than teach small unprofitable courses | <ul style="list-style-type: none"> We will spend less resources on courses that have insufficient demand We can use those resources to undertake more research or teach courses that students will pay for in large numbers Allow staff to write more grant applications resulting in more income to the University |
| Discount analysis | <ul style="list-style-type: none"> All discounts and decisions on why a discount was applied will be visible. Colleges will have better control over where and when discounts are applied | <ul style="list-style-type: none"> We can be more selective in our application of discounts Colleges will have a real input and say on where discounts are applied We will be able to determine in an informed manner, those courses that do not require any discounts e.g. due to high demand | <ul style="list-style-type: none"> Blanket discounts will no longer be applied, thus saving money Discounts can be targeted to specific countries to raise awareness of Glasgow University or to new courses to get them started and build a reputation |
| College profiles | <ul style="list-style-type: none"> Provide SMG with instant information on performance of Colleges across a number of key metrics | <ul style="list-style-type: none"> Allows SMG to have a relative view of performance of individual Colleges against other Colleges Will allow SMG and Colleges to identify weaknesses in performance and set targets for improvement | <ul style="list-style-type: none"> Increased data on relative performance will encourage weaker areas to improve This should lead to improved League Table positions and increased income |
| School Profiles | <ul style="list-style-type: none"> Provide School and College Management Groups with information on performance of Schools across a number of key metrics | <ul style="list-style-type: none"> Allows SMG to have a relative view of performance of individual Schools against other Schools Will allow SMG, Colleges and Schools to identify weaknesses in performance and set targets for improvement | <ul style="list-style-type: none"> Increased data on relative performance will encourage weaker areas to improve This should lead to improved League Table positions and increased income |

| | | | |
|----------------------------|---|---|---|
| <p>Class Profiles</p> | <ul style="list-style-type: none"> • Lecturers will better understand the make-up of the body of students they are teaching – qualifications, age, MD40 status, International Status etc to help tailor lectures to assist student understanding • This data used in conjunction with Course Pass/Fail rate data will allow us to focus support and other interventions | <ul style="list-style-type: none"> • Better learning experience for students • Better pass rates on courses • More motivated students • Better job satisfaction for staff | <ul style="list-style-type: none"> • Improved NSS • Improved Progression / Continuation • Attract more students |
| <p>Competitor analysis</p> | <ul style="list-style-type: none"> • Understand our competitors better • To understand their recruitment strategy, their capital expenditure strategy, their staffing strategy through the analysis of available HESA datasets | <ul style="list-style-type: none"> • We will be able to exploit our competitors' weaknesses and protect ourselves from their strengths e.g. target our local schools where our competitors are recruiting students, target schools in our competitors' area where we have not in the past recruited • Identify International recruitment trends, where international students are coming from and which courses • Knowing where other universities are investing their capital could help inform our Estate/Research strategy. | <ul style="list-style-type: none"> • Recruit more highly qualified students from areas not previously targeted • Improve League Table position • Improve Continuation / Progression • Counter dangers from emerging trends • More courses based upon student demand information will lead to more income for the University and we will target our resources more successfully |

| | | | |
|---------------------------|---|---|---|
| | | <ul style="list-style-type: none"> • Staffing investments will help shape our Research/HR strategy • Identify emerging trends • Understand who is applying from where and from what and use that data to influence our offerings | |
| Analysis of League Tables | <ul style="list-style-type: none"> • Bring together in one dataset all of the data for each of the individual league tables to allow us to undertake more comprehensive analyses, particularly at subject level • The provision of comparison data at subject level, with guidance on those aspects of our performance that if improved will increase our league table position | <ul style="list-style-type: none"> • Staff able to understand what metrics are causing their performance relative to competitors • Ability for staff to improve their position based upon easily available evidence | <ul style="list-style-type: none"> • Attract better qualified students • Able to sell PGT programmes more easily due to better league table performance |

Appendix 2

Overview of BI Programme

- Understand existing data collection and operational systems
- Understand key requirements and vision for information management
- Assess suitability of current platform(s) to deliver these requirements
- Document proposed information management framework, and high-level data model
- Discuss and agree document with BI Steering Group
- Develop proposal for road-map / timescale for implementation



As-Is Analysis

This stage would focus on the core data systems currently in place at the University:

- High-level mapping of the data held and operational systems in each of the schools and colleges
- Identify core concepts & data objects common to existing system(s)
- Review data entry & collection processes
- Identify data ownership in each case
- Characterise any existing data quality controls, where appropriate

Deliverable: this stage would provide a review of the existing hardware, software & infrastructure provision, with the aim of understanding the background to how this might support the future Information Management strategy.

Vision & Objectives

The purpose of the second stage would be to further characterise the overall vision and objectives for the “to-be” solution, involving appropriate stakeholders. Key activities would include:

- Establish a Project Board / Steering Group to monitor and guide this project, and hold initial meeting to:
 - Agree vision & principles
 - Determine priorities for action
- Business and Stakeholder needs
 - Identify key stakeholders in the Information Management agenda, across all levels of the organisation (i.e. Heads of School through to admin staff who input data)
 - Series of interviews with stakeholders, to establish their requirements and priorities

- ‘Top-down’ workshops
 - Series of workshops
 - Performance Requirements: work through required KPI’s (current and potential future)
 - Operational Requirements: Identify perceived data to be collected / collated, and how this could be used to improve operational effectiveness.

Deliverable: Documented objectives for each stakeholder group, and requirements map for each school.

Information Management framework

Following the completion of Stage 1 (the “bottom-up” as-is analysis) and Stage 2 (the “top-down” vision and requirements analysis), recommendations would be drawn up for the proposed Information Management framework, which would include:

- Develop high-level data model(s)
 - Data architecture (data warehouse, data marts etc)
 - Primary subject areas and high-level data objects
- Proposal for data collection systems
 - Recommendations to enhance current data collection and front-end business processes, if appropriate
 - Potential requirement to consolidate current data collection systems, if appropriate
- Recommended Governance / Roles & responsibilities
 - Data quality & ownership
 - Data stewardship
 - User involvement
- Recommendations for appropriate platform (hardware, software, infrastructure).

Deliverable: A draft document covering the above points, for review and discussion during the next stage.

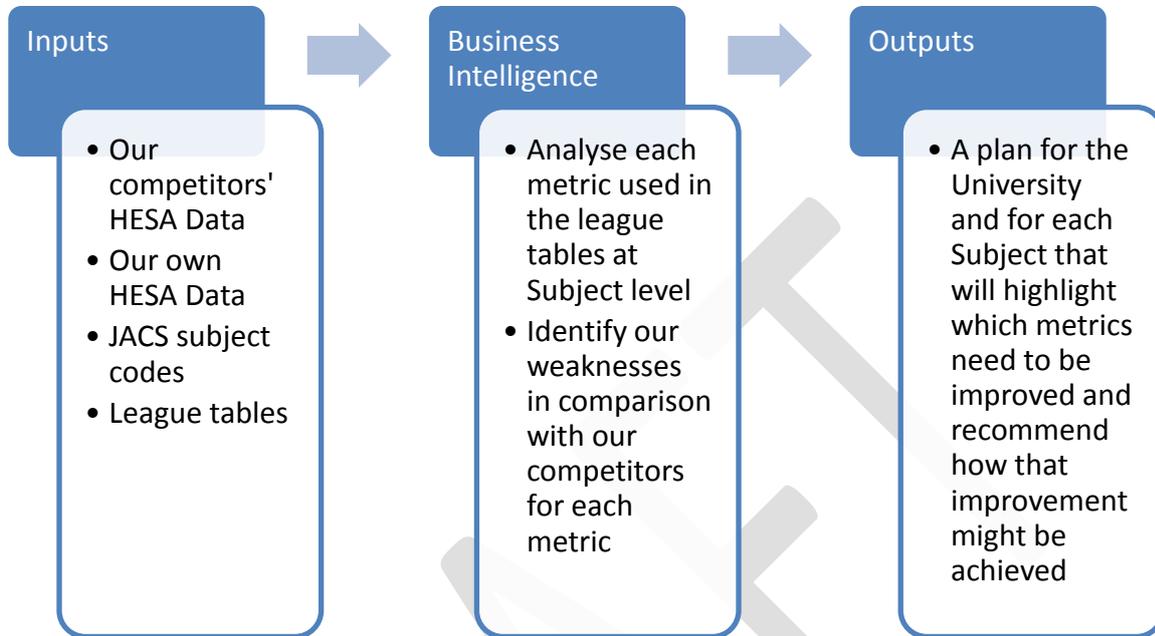
Review and Implementation Plan Scope

The framework developed in Stage 3 would be socialised with the key stakeholders and steering group, and a proposed road-map for delivery would be developed. This would recommend a phased approach, taking into account Glasgow’s priorities as well as the perceived complexity of each stage. The aim would be to deliver value as early as possible within the project, while working towards the eventual strategy.

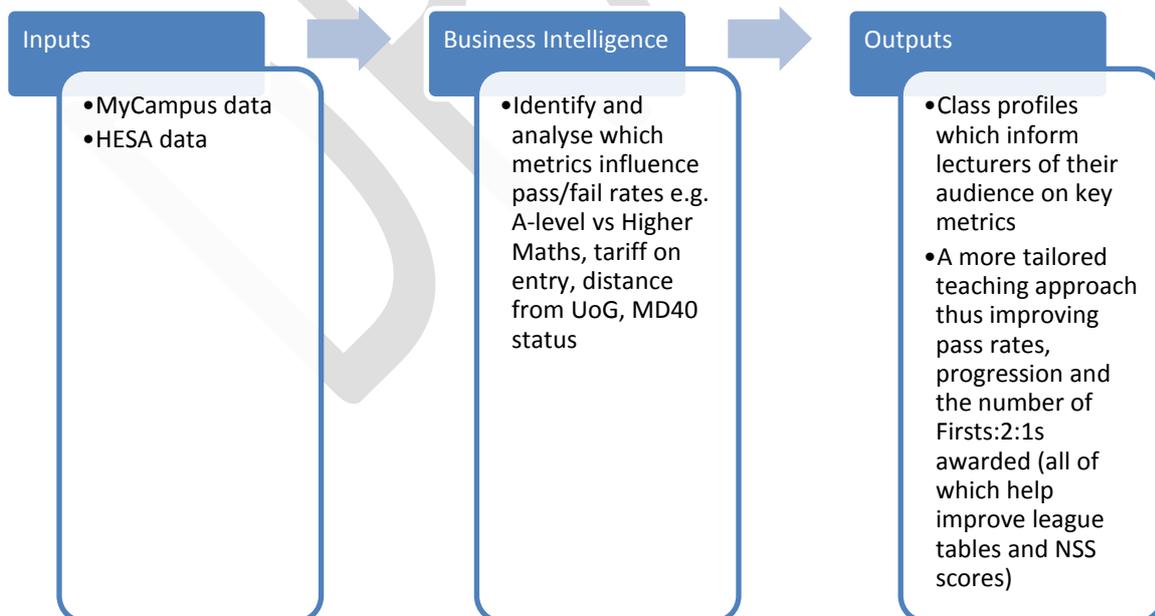
Deliverable: A final report, detailing the findings and recommendations.

Appendix 3 - Uses of BI in the University graphical examples

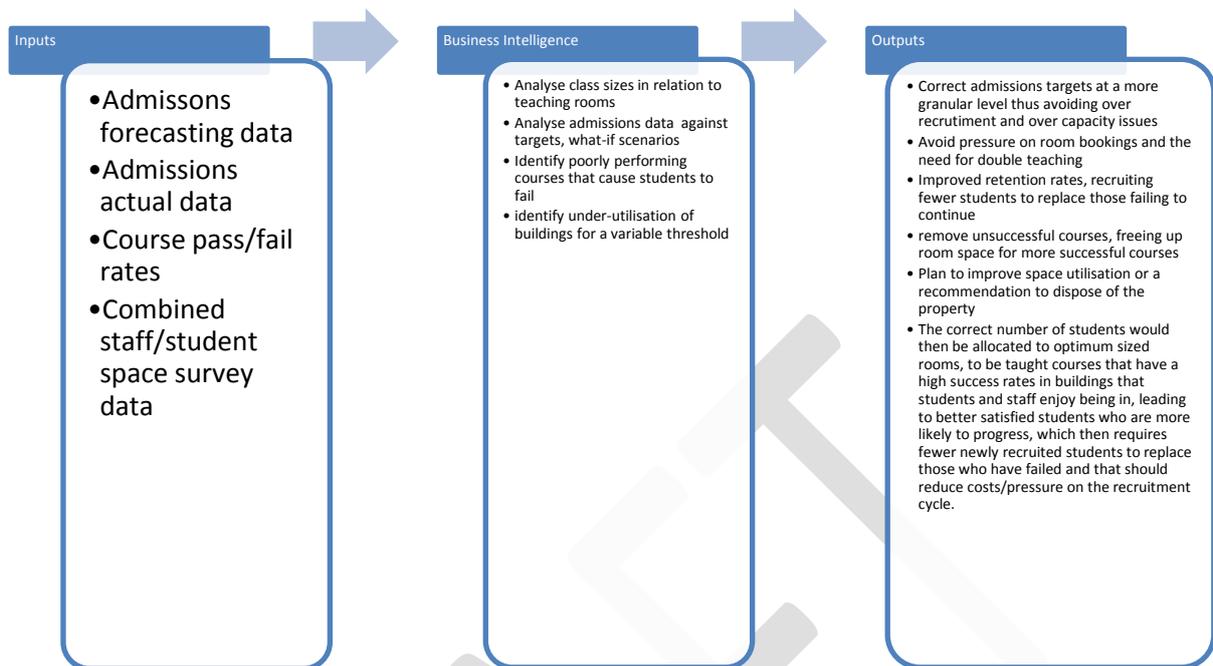
Improving League Table Performance



Class Profiles



Improving Space Usage and Student Retention



Reducing HR Sickness Rates

