

Cloud computing workshop:

Technology transition for business transformation

Presented by: Services to the cloud together with the RCUK-funded IT as a Utility Network +

Venue: Apex Hotel, Edinburgh

Date: September 30 – October 1, 2014.

Overview

This was a joint symposium/mini conference arranged by the Services to the cloud Project and the IT as a Utility Network. The aim was to share knowledge between two mature networks with overlapping interests in cloud computing. The target audience was decision makers (especially in SMEs), academics, policy makers and regulators. The programme included a rich spread of experts covering cloud providers, software/service providers and end users.

1. Introduction.

The aim for this two-day workshop was to take an in-depth look at how the cloud is maturing as a business model based on professional's practical experiences.

2. Attendees.

The workshop comprised both senior academics and professional business leaders whose daily lives have been affected by the cloud - from both positive and negative perspectives

3. Discussion topics.

Discussions were centred around four main topics:

- What are the benefits offered by cloud computing?
- Do these benefits differ for small medium and large enterprises?
- Are the promised features of scalability, security and flexibility of the cloud coming to fruition?
- Are newer and better opportunities opening up for service providers as well as consumers?

It was envisaged that conclusions would be reached through organic means and discussions among the members of the workshop, rather than in a rigid structured way.

4. Order of the day.

An informal structure was proposed for the two-day event. This ensured a comprehensive analysis of the cloud with all diverse backgrounds of the attendees at the workshop.

The structure for day one was as follows:

Session 1:

- **Marc Werfs** (St Andrews): 'Lessons from migrating to the cloud'.
- **Dave Golightly** (Nottingham): 'Cloud manufacturing: Concepts, users and requirements'.
- **Cameron Leask** (Escrivo): 'Real-world cloud migration'.

- **Keynote speaker: Aled Sage** (Cloudsoft): 'Using cloud without losing control: automated deployment and runtime management'.

Session 2:

- **Horacio Gonzalez-Velez** (NCI): 'Cloud-based geographic information systems with off-on-the-shelf components'.
- **Lee Gilliam** (Surrey): 'Understanding a large cloud adopting enterprise'.
- **Stephen Winter** (Westminster): 'CloudSME: Developing a one-stop simulation shop for SMEs'.

Session 3: Open Discussion: Resources for starting and growing a business in the cloud: Gordon Baxter and Steve Brewer.

The structure for day two was as follows:

Keynote speaker: Stuart Grant (geo.me): 'Growing up and staying lean in the cloud'.

Session 4:

- **Grant Campbell** (Brodiess LLP): 'Data security and the cloud'.
- **Ian Sommerville** (St. Andrews): 'Pricing and revenue'.
- **Mark Cairns** (Coach Logic): 'The sky's the limit...the story of Coach Logic'.

Session 5: Panel Q&A: Cloud present and future.

Chair: **Lee Gilliam**

- P1: **Ian Sommerville** (St.Andrews)
- P2: **Owen Rogers** (451 Group)
- P3: **Neil Campbell** (Brightsolid/Scotland IS)
- P4: **Lee Parry** (Fife Council)

Session 6: Open discussion: Reflections on the workshop, how to build on the foundations: Steve Brewer and Gordon Baxter.

The aim was to reflect upon a variety of questions with both speakers and participants, guided by Steve Brewer and Gordon Baxter.

Day 1.

Session 1

Marc Werfs (St. Andrews) Lessons from migrating to the cloud.

Marc is a PhD student in the School of Computer Science at the University of St Andrews. The focus of his research is in the effects of emerging technologies like cloud computing, mobile computing and 3S printing on IT change management and IT risk management.

Marc explained that users can introduce these systems easily, and in some cases without IT departments knowing about them, introducing risk.

It can be argued that even though introducing these systems is indeed simple, the existence of users to mitigate risks are important as they are flexible and adaptable where technology is too rigid.

He asked: How can companies achieve the right balance between risk management and achieving effective business practice?

Marc spoke to the conference about issues when migrating to the cloud.

He summarized the results of his study: that it is necessary for companies to react and anticipate change, while moving to the cloud it is important to integrate every aspect of the company. The adoption process was a reactive and anticipative approach. He explained that they focused on cloud lead time, product lead time and scope of the cloud project.

Companies tested the cloud, the characteristics of the cloud, then developed their own cloud system. Tests started with a few members of the company then included others until they were happy with the cloud model.

Inherent tensions were:

- What can we do differently with cloud computing and what do our customers actually need?
- A new business model, new culture of IT and short term product development vs. Customer demands, complexity and systemic product development.
- The cloud allows for us all to see changes – do we want that?

In the cloud, it is possible to sell products differently. It can move existing products first, analyse product use and focus on mission critical tasks. The cloud allows us to see how products are used – for example, can see how oil and gas products can be used in mining industry.

The cloud also provides security and updates software. Project partners found that they needed to have enough customers using cloud for cash flow, to keep business fluid. Factors influencing customer satisfaction were important. Businesses needed to keep customers happy with aspects such as: data location – do they want their data leaving the country? Product support – do they need and want support 24/7? Cloud can offer this and source what customers require in the future.

Currently – now that customers know how cloud works, their requirements may now differ.

Requirements AND companies are evolving because of the cloud.

Dave Golightly (Nottingham). Cloud manufacturing: concepts, users and requirements.

An important area that he investigated was ‘how technology can be a barrier’.

He is part of an interdisciplinary team, based at the University of Nottingham, involving manufacturing, computer science, human factors and the business school, as part of a 5-year project. He focused on the most important element of emerging technology – the people using that technology. Separate processes exist individually within technology, for example distributing and manufacturing.

The benefit of the cloud (with reference to these processes) is that its service encompasses all. Yes, you can pull down individual processes from within the cloud, perhaps manufacturing, but with all this technology there is always the need for some human involvement (automated orchestration). Manufacturers are trying to put together multiple configurations – which are available with the cloud.

An example of this could be medication and pill boxes, where there are medication pills that are needed in different quantities and are sorted into weekly pill boxes. The cloud can allow personal configuration of personal medication, and could put together personalised selections. With the cloud – businesses could look at niche products and the manufacturing and distributing of these.

Building of the products could be enabled via standardized production, they could then go through the cloud for more complex processes.

Cloud computing could allow more some very complex manufacturing processes in the future.

However, the following questions are raised:

- How do we communicate?
- How do we exchange requirements as a consumer to the manufacturers?
- Who do you trust to give this very important information to?
- If you request a product, where does it come from?
- Is the manufacturing cloud (and elements) doing what the users want it to do?

Dave held a mixed group discussion to discuss stakeholder concerns – everyone had suggestions of how they thought the concerns would change with the use of the cloud. He gathered the industrial concerns and also was offered academic concerns.

Industrial concerns were how it would work with people, and academics thought if the cloud would work like ‘robots’ so there was no need to focus on the human element!

It was highlighted that there was a need to ‘design the work to fit the users’, and how do human factors relate to the users. How do users express their needs of the cloud?

Industrial users asked what might they lose from an orchestrated supply chain – and with a ‘Facebook’ of manufacturing, how will the processes work? There were also concerns of maintaining their IP and the fact that they would need security. They also questioned how would they assess their supply chain? How would they retrieve data analytics, and how would they know that they were going to get their order back in five days with no ‘human guarantee’? How would the cloud affect this?

Manufacturing service providers also had concerns with the introduction of the cloud. The main concern was how would they provide a high-flexibility workforce? If there was a need to change the assembly line, there would be a need for training to increase cognitive skills and how the user would understand the production line and the processes used.

Application providers had concerns of presenting security with manufacturing on the cloud and wondered if the technology would be visible to them?

Dave concluded by stating that there was a great need to understand user roles and variety, to see how ‘manufacturing cloud’ would deal with high street users and large companies alike. He asked the question ‘what is the cloud life cycle?’

Cameron Leask – Escrivo Internet Consulting, Edinburgh.

Founded in 2002, Escrivo was formed by Cameron with a clear objective – to deliver professional internet consulting services to clients. They recognised that in addition to external legal, accounting

or commercial property advisors, many organisations had a commercial requirement for professional Internet consulting support.

The team at Escrivo brings a wealth of experience and delivers enterprise-class solutions for blue chip organisations in several industry sectors. This breadth of experience means that they understand how the Internet can be used to deliver commercial benefit in a wide variety of situations.

Cameron gave the group an introduction to his background. Having studied accountancy and computer science he then worked at an accountancy firm. Interested in software engineering, he ran their software engineering excellence.

Unfortunately, Cameron was offered a redundancy package in 2002, but fortunately for him, gave him the push to set up Escrivo.

He discussed with the group two of the main areas that Escrivo focus on: e-commerce and the support of all applications involved and web-based applications for business systems. Cameron explained that their work differed from the academic approach as they focus on SMEs and the world of the SME.

They faced web-faced challenges that required different intelligent thinking for useful solutions to the problems. One of the biggest providers of cloud computing services, Amazon is one of the company's partners and Escrivo have a team of software developers that work with Amazon.

Cameron said that he has never seen such a change in the industry as he has since cloud based technology. It has forced them, as developers, to think back from the users and to see how it felt for them as developers.

They were faced with some situations when looking at old web applications. How do they migrate these applications for SMEs with cloud? Could they put them on a virtual machine? Yes, it was efficient for back ups, but they found they were not utilising cloud to migrate systems.

It was found that it wasn't possible just to take old applications and 'stick' them in the cloud – so where would it possible to run databases? There were some technical challenges that needed to be addressed.

There can't be a 'one size fits all' as all clients have different requirements, ranging from storage to email applications.

Cameron offered some case studies working with the cloud – a gas regulatory compliance service, built in 2005 required a solution with a web-based application on a single server. The starting point was to reduce hosting costs and then to expand services.

One example of increasing performance with the cloud was a local property letting agent. Their core app was for property management, allowing a third party to access systems. Escrivo used a cloud based server to cache information locally – as it was image heavy, that created an issue. Escrivo used an Amazon cloud app that sped up images, improved overall performance of the website and kept down the cost of website hosting. This was a great advantage of cloud computing.

CONCLUSION

Cameron stated that when building cloud based applications – server virtualization is not the same as migration!

There is a need to explore that applications provided by the cloud provider to see which best suits that company – some might have better applications for that particular business, e.g. email services.

Example questions from the group.

G: If I were a cloud provider, what would you tell me to do that the others don't?

CL: Ask what they can offer the SME market specifically and make sure of the consistency of service. SMEs don't particularly care about the general market, just that it works.

G: How are customers coping with the change in cloud application?

CL: That's what they pay us to help them with! They don't cope very well as they are getting on with their day-to-day business – we are there to take that worry away from them and to migrate to the cloud successfully and with ease.

Keynote 1: Aled Sage (Cloudsoft): Using cloud without losing control: automated deployment and runtime management.

Aled Sage is VP Engineering at Cloudsoft. Cloudsoft's mission is to bring business to the cloud. Their objective is to accelerate cloud adoption by providing enterprises with a software solution that lets them exploit cloud without losing control.

Aled's particular areas of interest include distributed systems, concurrency, fault tolerance and cloud. Prior to joining Cloudsoft, Aled was Chief Architect at Enigmatic Corporation. He holds a PhD in Computer Science from the University of St. Andrews.

Aled spoke on a technical level of how to manage applications on the cloud.

He gave an example of an investment bank that has thousands of applications that require the cloud. They made the decision to move from a private cloud to public cloud, because it would integrate with existing systems.

Examples of market data that they needed to access were bank holidays that differ in different companies and the countries in which they are located. This meant that it was more of a detailed integration as information could not just be synced.

Concerns that he found people shared were that Amazon Web Services (AWS) could not run all applications as some were not just in Europe and were duplicated in the US. Also security was a concern, and what level all public cloud systems could give. Virtual Machines were questioned – to run from a server to a cloud-based system was difficult for people to comprehend.

But what do clients look for in public cloud?

Aled found that they required consistency, application health and better control of development, staging, production and upgrades. Also users would need the public cloud to follow the same processes, allowing them to check that the application runs smoothly.

The cloud enables for straightforward upgrades and without it, upgrades would be very difficult.

The choices are multi-cloud, public and private. Not only do you have these choices but how do you use it? There are books written on multi-cloud but not many who know how to run it.

There is also the option of a 'hybrid cloud' – and vendors are offering a 'cloud trial', to see whether customers like it and to see whether it is running efficiently with their existing systems and applications.

Aled gave an analogy of the cloud – and how people are viewing it.

Pets Vs. cattle.

Some treat their machine like a pet cat, nurture it, name it, would miss it if it wasn't there.

Some would treat it like cattle – kill it and replace it whenever you want.

But how SHOULD you view the cloud with no prior knowledge or experience of it?

Aled concluded that cloud-based systems are still very complicated and an ideal solution would be to have a blueprint of the system to make the cloud easier to understand. Presently there are a lot of components that need to be deployed and with the cloud so complex, there will continue to be issues when migrating to this web-based system.

Session 2

Horacio Gonzalez-Velez (NCI): Cloud-based geographic information systems with off-the-shelf components.

Horacio is an associate professor and head of the Cloud Competency Centre at the National College of Ireland in Dublin. He directs the NCI's cloud infrastructure, postgraduate programmes, and research.

Based at the Silicon Docks in Dublin, Horacio shares his research space with the digital 'big hitters' such as Ebay, Facebook and PayPal. While these digital companies have grown and improved in the last decade, they haven't had as much change as cloud computing.

The academic definition for cloud computing the 90s was 'Computational Resources – where the boundaries are determined by economic factors rather than technical limits. Computational resource was commonly used to describe accessible computing equipment and software'.

In layman terms, this would refer to software that you deliver your service on, with a system. For this to be a cloud-based system, you need to have elasticity.

Horacio explained to the group how his study links to cloud computing, and more specifically geographic information systems.

A Regional Road Accident Database could really benefit from cloud computing. Shared information could pinpoint areas in the country that has more frequent accidents, 'hot spots' and areas that are susceptible to heavy traffic, accidents and the vehicles that are involved in these incidents.

This system could enable insurance companies to update their statistics more often.

It could also benefit news updates, traffic tools and apps, and vehicle manufacturers.

But with information that changes from day to day, what would be the most effective communication tool? The Internet was decided as the best tool.

It has all essential characteristics; a broad network access, a measured service, on-demand self service, rapid elasticity and resource pooling.

A cloud-based system enables a number of users to have access to information contribution, such as immediate updates, traffic information and research results.

SMEs that rely on information such as this used to have the issue of not being able to back up their system information. Cloud used to be unable to back up, but, as Horacio explained, Microsoft has now improved and has different databases that can back up information and is no longer an issue.

Applications are now possible on Cloud – application that are not given information, but can extract it independently.

Lee Gillam (Surrey). Understanding a large cloud adopting enterprise (for fun and profit).

Dr Lee Gillam is a senior lecturer in the department of computing at the University of Surrey. He is a chartered IT Professional Fellow of the British Computer Society (FBCS CITP) and his research and teaching covers cloud computing, information retrieval and information extraction and ontology learning, and the legal, ethical and professional dimensions of computing.

He is the Editor-in-Chief of the Springer Journal of Cloud Computing Advances, Systems and Applications (JoCCASA), an editor of a Springer book on Cloud Computing and PI on a nearly completed TSB innovating in the Cloud project.

Lee explained that his present project involves companies that have large volumes of documents that contain high value content, that people copy sections of and then send them on.

One of the biggest challenges is the question of where all the documents are at any given time? (something that the companies should indeed be concerned about).

The cost of intellectual property in the UK is £9.2 billion, whereas in the US \$300 billion is mooted to be spent in a US study.

Information is still not safe – if someone should get their hands on it, they can then travel to China and patent it over there, therefore passing it off as their own. More security is needed.

Some have experienced problems with ‘losing’ content. According to the FBI’s pages on Corporate Espionage, just some of the methods of targeting or acquiring trade secrets are stealing, concealing, photocopying, replicating, downloading, photographing, etc.

So information security is the weakest link in the supply chain.

A manufacturer will tend to be familiar with its established chain of suppliers, but probably not of the cloud service providers to those suppliers (to share information).

But where are these weaknesses? The infrastructure of a company could be a problem – US giant Target announced that data on 40 million credit and debit cards was stolen because of security weaknesses via internet-connected heating, ventilating and air conditioning systems.

Of course the company as a whole would like particular information going out to the exact recipients that you choose – so if there is some kind of leak, some way of effectively stopping it.

But how do we prevent leaks? How do we detect leaks? People need to see tangible objects/information to do business, so you cannot hide information and need to have some form of trust. (For example, could you build a car without knowing the shape?)

Ideally, you would like to know their IP sources.

Can you check all documents that you have shared? Can you search all their documents to see if they still have any of yours? Should you put all the content into paragraphs into Google etc. and see if you get any hits? Not a good idea. Can you do the same, but without the risk?

Companies should have kept them somewhere secure in the first place.

Public cloud hosts private indexes – these ensure that your information is not available to everyone.

Back to car designing – there is a need for security in the design chain, as designs are passed on to different links in the manufacturing process.

Protecting information pre-patent is important. Yes, the information is required by suppliers, but this information needs only to go to select people. How can this be regulated?

Lee concluded that companies need to track sensitive information.

Geolang Ltd. has introduced the 'Ascema platform' that protects sensitive information at the content level by identifying, classifying and tracking data across the corporate infrastructure.

Organisations need to decide on public cloud servers, private on-premise cloud or managed off-premise cloud, depending on which suits their particular organisation.

There are some subjects to take into account. Some are specifically built for SMEs, some not. Some security plans you don't have to talk to an IT department, some you do.

Organisations have high value content that they will happily expose to the cloud – for this reason it is imperative that your information is secure. This is because in many cases, exposure to the cloud is on a needs-must basis.

A question from the group, agreed by many, was 'Do you think that people understand the value in their content?'

Lee said "No! This is the problem – and explaining to them the importance of security for their content, especially on the cloud."

Stephen Winter (Westminster). CloudSME: Developing a one-stop simulation shop for SMEs.

Cloud SME is a European FP7 project with the goal of bringing SMEs closer to cloud computing. The CloudSME project is developing a cloud-based, one-stop shop solution to provide a scalable platform in manufacturing and engineering SMEs.

Stephen Winter is the CloudSME Project Administrative Manager and Professor of Distributed Computing at the University of Westminster. He was previously the Dean of the School of Informatics and Director of the Centre for Parallel Computing, where he is currently based.

Stephen introduced himself and his role within simulation software in manufacturing and engineering. These simulations are used to analyse a wide range of physical and chemical processes, manufacturing systems, logistics, transportation networks and supply chains.

He explained that simulation software usage has been low until now because of:

- Prices
- Skills and technical expertise
- Software costs
- Time investment to create simulation

The CloudSME project (Cloud-based Simulation platform for Manufacturing and Engineering) is developing a cloud-based, one-stop-shop solution to provide a scalable platform for small or larger scale simulations, and enable the wider take-up of simulation technologies in manufacturing and engineering SMEs.

This provides everything a manufacturing or engineering SME needs to improve its capacity through simulation.

Simulations can be bought from software from a shop or directly for cloud execution.

An example that Stephen shared with the group was that of a 3D scan training shoe insole designer. They needed to have a tool to automate the process of designing tailored insoles for sports enthusiasts. Started by podiatrists, information was needed to be shared through a system – the most obvious was The Cloud.

As mistakes are often made between podiatrists and manufacturers (via emails and faxes etc) the solution for avoiding these mistakes was sharing information in a cloud system.

There were some issues with performances, but they have since been sorted, and using the Cloud was successful.

Business simulation is an effective solution for step-by-step animation of the logical flow of work around an organisation, as it can visualise how a process will perform with any chosen configuration of people, machinery and information. These simulations are currently rare because of the lack of

human resources to create the simulations, and the software and hardware cost. One of the biggest reasons why the simulations are not commonplace is because of the low awareness of the technology involved.

CloudSME could solve this by creating templates for large groups of similar SMEs, designing automated scenario analysis and marketing of niche applications with specific benefits.

Stephen wanted to clarify that if this type of simulation via The Cloud would take down costs of any manufacturing and engineering business.

Session 3. Gordon Baxter and Steve Brewer invited an open discussion based on resources for starting and growing a business in The Cloud.

Steve Brewer introduced the ITaaU network. Gordon Baxter then introduced himself and his three-year knowledge transfer project, in which he had worked closely with seven SMEs.

Day 2.

Steve Brewer of ITaaU introduced the second day of the conference, welcoming the attendees that were absent on the first day, then produced a round up of the events from day one.

Gordon Baxter then introduced the first speaker.

Keynote 2. Stuart Grant (geo.me). Growing up and staying lean in the cloud.

Since completing a Ph.D in Artificial Intelligence, Stuart has spent 16 years applying these skills to business solutions. He was a founding member of a technology spin-off from Imperial College, London that was eventually acquired by Cisco Systems. He has worked as a technology consultant before returning to the UK to deliver online payment systems and location-aware web services for major wireless broadband providers.

The appearance of three game-changing technologies – web applications, agile development frameworks and cloud computing – prompted him to direct the R&D programme that brought Geo.me to market.

Geo.me has an operating model based on delivering exceptional service for their customers and taking full advantage of the benefits of cloud computing

Stuart introduced himself to the group. He explained how in 2008 he and co-founder Jim started a business – they had no specific ideas but both had a software background and had read about the

cloud. They had heard that you could rent services, with servers that you could purchase and invest capital. But it was a slow and clunky process.

Geo started from scratch providing location data from large enterprises – the cloud allowed information provided from the web.

Stuart provided two typical case studies. Shell systems required a continuous feed of their retail locations. The data was to go onto an online platform, which Google Maps first provided with their first cloud applications.

The Shell website had a station locator – this had attributes of facilities and prices, with a feature to plan routes to them. This, along with the smartphone app (Geo decided NOT to build apps, but to facilitate them with data available from the cloud) was operated in The Cloud from day one.

Their ‘lean startup’ slowly began to emerge with the help of The Cloud. Running services from a single server until 2010/11, Geo then looked over how they deployed cloud services, using existing Amazon web services. AWS provided web services, deployed across AWS regions – Amazon had a DNS system, which worked out where to send the traffic, to the nearest geographical points where they had servers.

Amazon also had ‘cloudwatch’ – this looked at your servers, would send the individual company an SMS if there was a problem. This was efficient until 2012 onwards, their ‘learning to fly’ period. Their systems were now on a serious scale, they needed more cloud components – these were quite easy to buy.

Geo relies completely on cloud services, and as Stuart states “the cloud allows us to automate almost everything we do.”

The cloud infrastructure helped Geo to stay lean on 2014. Stuart pressed that ‘Staying on The Cloud is worth the investment’ and that Amazon Web Services made their business possible in 2008.

Session 4

Grant Campbell – Data Security and the cloud.

Grant Campbell is a partner and head of the Commercial Services Division at Brodies LLP, Scotland’s largest law firm. Grant specialises in advising on technology, IP, commercial contracts and data protection, and is an experienced commercial with over 18 years’ experience.

Cloud hosted services provide great opportunities for businesses looking for new ways in which to distribute their products and services to customers. However, providers of cloud-based services need

to be aware of the differences on their obligations under data protection laws compared to those that apply to software distributed on a traditional model.

Speaking about security and privacy, Grant emphasized that customers are asking about these issues, and he acts for both service providers and customers. He finds out how THEY view The Cloud – and security is often seen as one of the biggest barriers for people investing in the cloud.

Grant spoke that as the market evolves, no doubt this will change. He also clarified that in no way is he an IT specialist – but a lawyer with his views in these particular issues and how to solve them.

Data security often impacts the service providers and they should address these issues. The Data Protection Act (1998) includes the Law of Confidentiality – the agreement that you keep information secure. If you (as a service provider) promise this security and the cloud is compromised, you need to avoid the legal risk.

Regarding information security, the traditional contract model is that the licensor licenses software (software downloaded or on disk) and that licensor provides that license to the customer (licensee). The customer is responsible for hosting and the security on its own server.

Because of the complicated structure of the cloud provider service model, the contractual chain has three parties rather than two – service provider, infrastructure provider and customer. The Data Protection Act 1998 (DPA) governs the ‘processing of personal data’ which will now include cloud-related activities.

Data protection obligations fall on the ‘data controller’ – the person or entity responsible for how the data is processed. This includes responsibility for complying with the data controller responsible for processes carried out by the data processor. The data processor has no direct obligations under the DPA (yet) but the Information Commissioner’s Office (ICO) has the power to issue fines of up to £500,000. Data controllers have to be careful as they can open themselves up to fines if they are careless with information.

Grant spoke about applying data protection laws to cloud-hosted activities. The DPA requires eight protection principles, of which the seventh is appropriate technical measures taken against unauthorized or unlawful processing of personal data against accidental loss or destruction of, or damages to, personal data.

The controller must have a contract in place with the processor and must ensure that the protection provisions match what is promised to the customer. This needs to balance the risk with terms that do not scare off customers.

Mark Cairns (Coach Logic). The sky's the limit...the story of Coach Logic.

Coach Logic was created to give ambitious amateur coaches and their teams the chance to maximise their potential.

Mark emphasized that he is a coach, rugby teacher and player himself, NOT a techie. In fact he played for Scotland and could recognise the need for how they managed their players. The coaches didn't have the tools to manage performance and they definitely didn't have much time. They also didn't have the resources – nobody to staff the technology/laptops etc and if coaches were working on their own, they had no easy way of managing their data of players. They certainly didn't have funds/ a large budget.

The current practice of users for coaching is via Facebook, Youtube and Dropbox. Performance on Facebook was found to be too tough! Too social and chatty. It was found that Youtube could create videos for training, and could be private. Also Dropbox allowed people to share files securely – between coach and player.

There was a need to overcome these barriers, by reflecting usability of current online practices. These practices needed to be accessible from any device with internet connection, but must not add to the current coach workload. Instead of being sent a DVD with players' progress, wanted a way that players could just download these videos.

The amateur players were academic and professional – sport science graduates, company managers, physiotherapists etc. Not particularly technical, but had some know-how.

The requirements for coaches and players to share data were services such as training sessions, team selections and physiotherapy sessions. These could be shared through DropBox, which was used within Coach Logic.

However – a whole new area of sharing documents was needed – a video room which worked with filters relevant to different sports. Coach Logic introduced a process in which you could stop videos and add time stamps, to then share with others – a way to add 'notes' to tell the players about whatever is on the video and to stop it at a specific time. This was a good way of managing the teams – it was a successful solution to see when and how players were missing goals/tries etc.

The technology was made simplified by introducing tutorials on Youtube of how to use the system.

Business Gateway then issued Mark and business partner Andy with a grant through Scottish Enterprise for 40% of the development costs. Coach Logic then launched in November 2012.

In the early days, customers liked the system as it was billed as a fixed cost. Transfer costs were fixed too – as amateur players didn't have long to watch videos they did inbound marketing on Twitter,

Facebook, LinkedIn, YouTube, blogs etc. They also used mail chimp etc. The first warning of storage space reaching a limit was at the start of the 2013/14 season when the Coach Logic server was running out of space. Mark and Andy didn't think this would happen as they had used an Amazon hosting.

By then, some big clients were using the system, West Ham, Sport Scotland, Scottish Rugby etc. West Ham said that they liked the usability of it and how players were involved and could understand its workings rather than just being used by the coach.

The video feature meant that 711 videos were uploaded and all videos were viewed at least once. Match and training footage were now all being uploaded and the RAM (Random Access Memory) was becoming extremely full.

In 2014, Coach Logic had to switch to the cloud. Their current concerns of the cloud are that it is too dynamic and ever changing. There is also a worry that it is not possible to use encoding software.

Having said that – there are reasons to be cheerful! The demand for video will increase (which is a huge positive for Coach Logic) and we will continue to understand the cloud more and more!

Ian Sommerville (St. Andrews). Cloud product pricing.

Ian was a professor of Computer Science at the University of St Andrews until his recent retirement. His background is in software and systems engineering and he has also been involved in research in systems dependability and complex systems for more than 30 years. His interests in complex systems and their business use led to cloud computing where he set up the first experimental cloud in the UK at the universities of St Andrews.

Ian's work on cloud computing has focused on the business uses of the cloud and he has explored issues around the costing of cloud configurations and the pricing of cloud services.

In 2009/10 Ian was involved in business issues for the cloud. He produced a free cloud cost calculator in which you could input planned infrastructure, with planned costs. The question was – how does a product provider work out revenue costs?

The calculator app gave the power to plan, estimate, evaluate and forecast capital products. The bigger question was – if this moves to the cloud? How much do businesses charge?

If the product is expensive, it would be easy to get relevant customers but others will buy generic tools. The cloud meant that the 'try before you buy' mechanism could be put in place. See if it is relevant, and then gather more customers.

It is expensive to send out services to software support in other countries – the cloud could take out these costs. But what revenue could you expect if you take your business to the cloud? Perhaps subscription services on a pay as you go model. Pricing is much harder than costing – you know what you have in terms of existing customers, but not new customers. It was apparent that there was a need for a tool that does this. A pricing ‘scheme’.

There were questions to be asked – should the pricing be per unit, per month? How many users will it have? Ian came up with three ‘classes of user’, light usage, regular usage, heavy usage. It is possible to a certain extent to predict how many users the business will have. It is important to define your server arrangement, and because Amazon changes their servers frequently, this is hard to cost.

But – you CAN with this simplistic model. It gives a revenue breakdown according to that type of user. It shows that charging per hour gives a lot more than per user. Ian found that no one wanted a pay as you go model and that customers wanted predictability (so that they could out into place forward plans) and also wanted security. People were also unsure as to the safety of the system, and wanted to run it themselves. Amazon, for example, pay a lot for security measures.

Ian highlighted that it is much safer to put things in the cloud than run them yourself.

Session 5.

Panel Q&A – Cloud present and future.

Four of the attendees at the workshop presented a 5 minute talk with their perspective of the cloud, to then invite questions to be fired at them.

Here is a small synopsis of the speakers, and the content of their talks. The session was chaired by Lee Gillam.

Ian Somerville (St Andrews)

Interested in software engineering.

People move from servers to the cloud and do the same stuff! A distinction is needed between private hosting and the cloud – elasticity. There is a need for new app building instead of server based.

How can we use the cloud in a different kind of way? How can we build elastic systems? How can we scale it out? How can we use it effectively?

Owen Rogers (451 Group)

Is an industry analyst. He needs data to analyse, and talk to service providers weekly.

Enterprises want and choose to use everything (tools) on their terms, but don't want to contact each other individually. A 'cloud broker' is being introduced for this very reason.

Neil Campbell (Brightsolid/Scotland)

Neil is head of marketing at Brightsolid, is a computer science undergraduate and a business postgraduate. He has had cloud focused roles at Sun Microsystems. Brightsolid own and operate tier 3+ data centres in Dundee and Aberdeen.

They host cloud in their facility. They need the cloud to be secure, reliable and cost-effective. He asked the question – how do we compete with Amazon web services? People are buying more space and storage to host their businesses. The biggest myth is that the cloud is the default today and that hardware sales are shrinking!

Truths:

- Large enterprises are skeptical of disruption
- Senior people in business still buy from real people
- Budgets aren't burstable – costs need to be reasonable.
- Software engineers aren't cloud engineers!

Lee Parry (Fife Council)

Fife Council versus the cloud!

Wikipedia's view of the cloud is not what he cares about, but how it benefits the council.

The difficulty he has is that adoption of the cloud is incremental. He can influence the budget – but he cannot influence his customers.

The council doesn't care whether they use public or private cloud – as he has to build the infrastructure internally.

The challenge for him is influencing people who don't want to be influenced. If he can standardise his shared service, he can re-sell to the rest of the public sector.

He needs tools that will work in years to come, as the council has no budget to replace those tools if they do not work.

The council needs current functionality – **that** is what people want.

Session 6.

Steve Brewer and Gordon Baxter reflected on the workshop with a short open discussion, and how to build on the foundations.