

The Ingenuity Experience in Research and Development in the ICT industry

(Presented by Ir. Azman Ahmad, Chief Executive Officer, Ingenuity Solutions Berhad of Malaysia)

Ingenuity was incorporated in March 2000 with the intention of establishing an intellectual property company in Malaysia to provide corporate software solutions to the business community.

The cornerstone of Ingenuity was to establish an R&D strategy from day one as we realised that in order to remain competitive and current in the intellectual property space, continuous improvement and innovation was necessary as we carve out our space in the Malaysian corporate scene.

Some of the key elements in our R&D program are set out as follows:

1. R&D motivation: product and service competitiveness in a highly competitive market (CRM and Financial Solutions)

As Ingenuity are playing in a highly competitive solutions market, we saw the need to keep relevant by continuing to innovate. The days of salesmanship alone does not ensure success. Businesses are more critical nowadays, they need solutions that keep them ahead of the curve, while ensuring good support and migration possibility with the nimbleness and the flexibility that will keep them ahead of competition.

As such Ingenuity embarked on a program of R&D with a small team (<10 researchers and programmers) with a budget of approx USD 2m to develop an expertise in intelligent business analytics that essentially uses data mining and pattern recognition as key tools for decision-making.

In order to undertake this R&D program, Ingenuity had to come up with a set of expectations and deliverables that would be measured continuously during the R&D process to ascertain its effectiveness and success.

2. Setting strategies for success and maximisation of benefits

Ingenuity made sure that it first came up with an R&D blueprint in terms of the program and what it intended to achieve at the end of the R&D program. The end result was then mapped into the company's solutions base and the overall growth that the R&D effort would contribute towards.

As Ingenuity is a commercial entity, the R&D projects that it undertook would not only be scrutinised from an Intellectual Property development angle but whether there was commercial potential to gain from the effort. Ingenuity being a growing company in the Malaysian ICT industry, was very clear on the need to have commercial benefit from the R&D effort as it was involved in innovative R&D rather than fundamental R&D.

The R&D program that consisted of Business Analytics and Data Mining and the creation of a Financial Data Interchange Protocol to link financial systems to Ingenuity's CRM attracted the attention of Multimedia Development Corporation (MDC) of Malaysia. Through the MDC, Ingenuity was able to obtain a Multimedia Super Corridor Grant for the R&D project from the Malaysian Government.

In addition, Ingenuity also attracted investment from local based foreign venture capitalist as well as Technology Park Malaysia (TPM), a technology park set up by the Malaysian government through the Ministry of Finance to take equity participation in the company. Ingenuity accepted equity participation of the latter.

Therefore, as a company initiative, Ingenuity set in motion the keys strategies for success, locked in all the tangible benefits before fully embarking on the R&D program.

3. Coordinated joint effort with foreign partners

Collaboration with foreign experts was essential to fast track the learning curve as well as the R&D program. Ingenuity took a 'do not want to reinvent the wheel approach' for some elements of the R&D while concentrating on the new elements that add value to the new IP.

The work program with foreign partners needed to be well defined and coordinated as inter continental work and understanding of the R&D deliverables is a major challenge in order to obtain the desired results. This required continuous monitoring and teleconferencing in addition to email tracks and program measurement methodologies in order to ensure the success of the R&D.

4. Technology transfer obligations

One of the key deliverables from the foreign partner was ownership of the IP. The deliverable from the foreign R&D partner was the transfer of IP from their specific role in the R&D program to Ingenuity. This was agreed upon at the outset of the program.

5. Real world context

In order to ensure realistic expectation, the real business world input was incorporated in to the R&D program. This included:

- Securing 'participating' companies, that provided business contexts and access to their databases in order for the predictive modelling and the data mining features of the R&D could be tested on real life, real business conditions.
- Continuous assessment of the R&D outcomes in those given business contexts gave an appreciation of the suitability of application.

Key Performance Indicators

Some of the key performance indicators that were measured during the R&D program are as follows:

1. Fast track skills and knowledge acquisition by Ingenuity's team

It was important to be able to see tangible skills sets being acquired and enhanced during the R&D program

2. Increased competitiveness of Ingenuity's solution, eg. the creation of new service offerings related to CRM and the FMS

The deliverables would have a direct input to the current suite of software that Ingenuity had, in that the deliverables would add new features and capabilities to Ingenuity's products and services.

3. Definition of proprietary methodology tested in real business contexts

The source codes and methodologies that were developed during the R&D program were tested in a real business environment therefore the occurrence of software failure were minimised. It also gave Ingenuity the ability to customise predictive support (in the context of CRM) relevant to the customer's business objectives.

Moving Forward

In moving forward, some of the key R&D concepts practised and developed by Ingenuity can be summarised as follows:

1. R&D should be linked to a "sure" contract upon completion to test the commercialisation of the R&D program without having to rejustify the need in the market. (Refer to diagram 1)

Rather than measure the success of the R&D program upon its completion, the R&D program needs to be measured continuously and then have a mechanism that ties to a secured commercialisation contract if the deliverables are

successfully met. This means that the commercialisation plan is part of the R&D program from day one.

The deployment and assessment of R&D deliverables at defined points (milestones) throughout the project, and a success measurement methodology that will basically trigger the contract if all the requirements are met should be part and parcel of the R&D program. There should not be a need to rejustify the R&D deliverables prior to moving on to the commercialisation phase where the investment in the R&D program could be recouped and the deliverables could be measured in a real life commercial entity.

In the case of Ingenuity, we had lined up a client to be the recipient of the R&D deliverable as Ingenuity could easily incorporate a data modelling capability to the CRM software that we had installed earlier thereby ensuring a portion of our investment was recovered through this existing client. On the governmental side, governments could provide R&D grants that basically tie a commercialisation contract to a recipient government department that would derive benefit from the R&D program.

2. R&D is geographically independent but condition dependent.

Ingenuity believes that R&D could actually be done anywhere in the world especially Intellectual Property R&D whereby the key performance indicator for the success of the R&D program is very much driven by the deliverables. However, it must also take into consideration the conditions for success, for example, one, if there are government grants and incentives, two, ready performance based contracts that could be tied to the success of the R&D work, three, conducive or matured business environment or four, technology input deemed critical for the success of the R&D program. All of these could be available in other more advanced countries or developing countries where the R&D communities could facilitate these types of outsourcing or offshoring concepts.

3. Global partnering in R&D will help accelerate process improvement and ensure higher degree of success but ownership issues must be win-win & equitable.

Once it is identified that global partnering is essential to the success of the R&D program whether the model is outsourcing or offshoring or a hybrid of the two, then the question of equitable ownership and joint successes need to be addressed.

Ingenuity practises the concept of co R&D location to accelerate work completion and the creation of a borderless environment for the sharing and collaboration of skill sets and the movement of intellectual property. In this context, Ingenuity hooked up with researchers from Spain to undertake some parts of the R&D project where we knew our Spanish counterparts had done a component of the

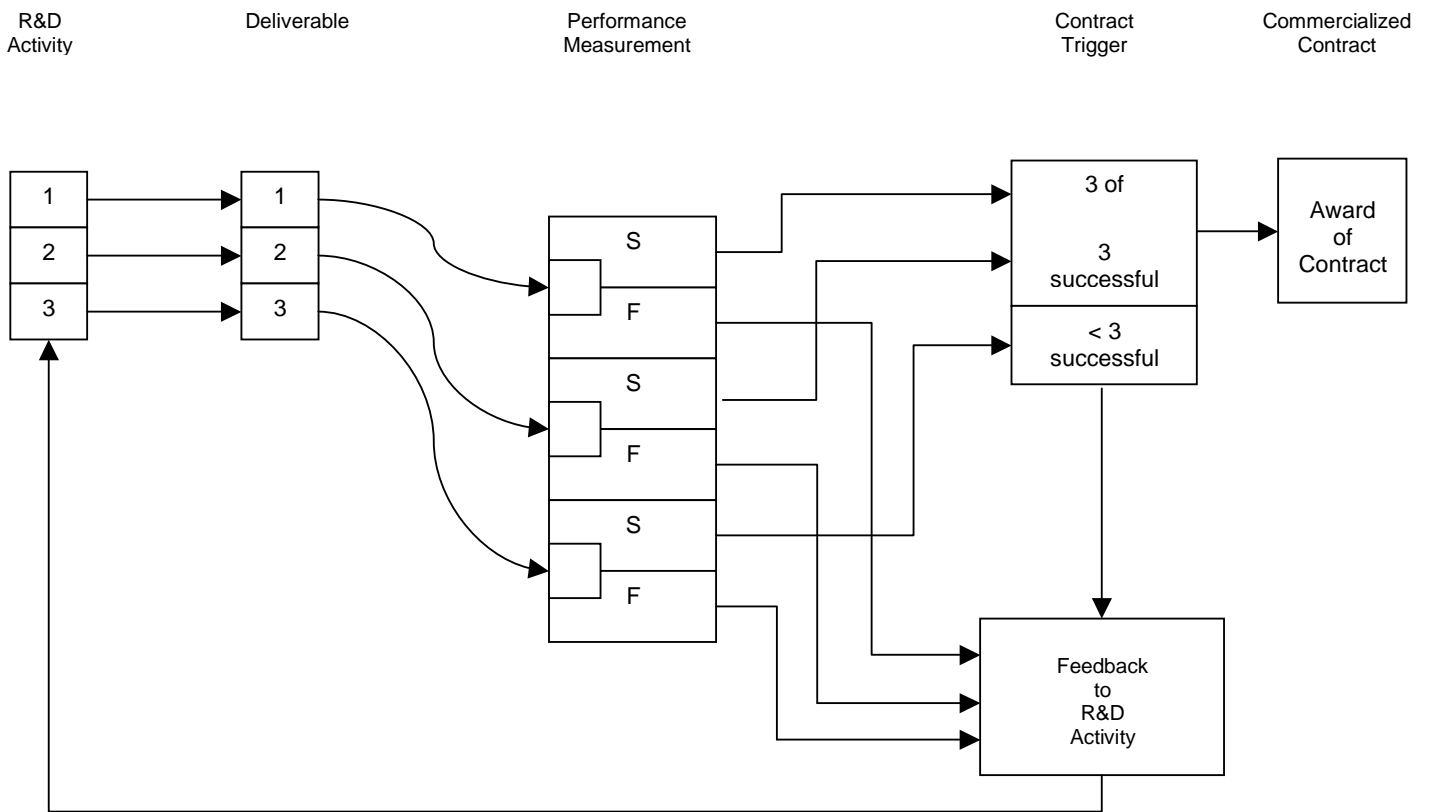
R&D that we wanted to further develop so rather than start from ground zero, Ingenuity started our R&D from a higher base.

In addition by undertaking this collaborative R&D approach, the 2 entities could derive benefit from the R&D outcome if they share ownership of the IP but the market share of the eventual commercial product will then be based on each entity's marketing, A&P and branding of the R&D product. This translates to the extension of marketing reach for both parties if they intend to cross-market the joint IP that they own.

Conclusion:

R&D programs needs to be looked at from a new perspective. R&D per se, is no longer a successful model by itself and no guarantee to attract either FDI or even local funds to participate in funding the programs. The investment into R&D needs also to be measured from a commercial perspective, otherwise the activity of R&D could be seen in some perspective as an academic exercise rather than having a tangible contribution to the global society.

Fig. 1 R & D Commercialization Plan



S : Successful
F : Failure