

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT – PLEASE COMPLETE ALL BOXES INCLUDING ‘NIL’ OR ‘O’ (IF APPROPRIATE) IN FONT SIZE 12

SUMMARY OF THE KNOWLEDGE TRANSFER PARTNERSHIP

Give an overall account of the Partnership describing the main events, achievements, for both partners and the Associate(s), problems and solutions and changes to objectives. This section should also be used to highlight any other points considered important. **There is no need to duplicate here details given on subsequent pages.**

The project had 5 objectives which are described within the Associate's report, however the first three were achieved before the project began, and so the project focussed on the last two, namely to: *Design and develop the call control programme within the Softswitch*, and *Test call control function and integrate call control within the Softswitch system*. These objectives were met by an iterative development process that had three phases: (1) *basic functionality required for customers (minimum viable product)*, (2) *expanded call control and Centrex functionality* (improved stability, new feature system, call pick-up, call divert features), and (3) *advanced features and system-wide state monitoring, support for graphical call manager utility*. Importantly, the cyclical nature of the project means that the company can continue to evolve and enhance the services without a major impact from the premature termination of the partnership.

In essence the project required the migration of telephony features away from traditional telephone networks towards a Voice over IP (VoIP) network. IP or Internet Protocol is the basis of the internet and web services. The use of IP offers the potential for enhanced operations with better margins and lower costs. This places the company in a more competitive position against the larger (and slower) incumbents. Also, IP provides a unifying factor permitting (in time) a better *integration* of voice with data services such as email and instant messaging. This offers a strong business opportunity in the near future.

The move to IP provides a more open approach to the controlling (switching) software, and has lead to open source offerings. Switching software is often called a *softswitch*. Indeed the project rolled out telephony features by extending the VOCAL softswitch. This is a major accomplishment and puts the company in a strong commercial position. It also offers the strong potential of offering *integrated* voice and data service, and so strengthens the company's commercial advantage.

As part of the convergence of services, voicemail delivery was incorporated with email. This allowed customers to retrieve their voicemail from anywhere as long as they could access their email giving mobility to professional users. The phased approach was long recognised to be the most efficient way to deliver and market a subset of services on the platform which remain constant throughout the project. This was explained in the early stages of the project as part of the decision to standardise on VOCAL softswitch as well as dispensing with the QoS (*Quality of Service*) measurement functions as these were quickly recognised to be unnecessary for the core of the project.

It is important that such integrated services can be created in a simple manner. The speed with which integrated services can be created and validated is an essential element of commercial competitiveness. Hence the associate as part of his MPhil at the university looked forward to how this might be achieved. Such techniques can be described as *service architectures*. However here the service architecture must handle a wide array of communications services, not simply voice services. Hence the associate has developed a *unified* service architecture that supports a wide array of data and voice services. The idea is to present a uniform view of a variety of services. Middleware (software between the services and the network proper) can then adapt specific applications and specific services. During the course of the project, the associate has designed a generic service interface, and has begun thinking about how this can be mapped onto specific underlying networks.

In addition to the associate's research, the university has strengthened its laboratory facilities, and has found the industrial feedback extremely valuable. Also, EdNet have joined the department's Industrial Advisory Board, and have talked at the research seminar series held at the university. Moreover the Associate has helped with a final year course option.

The Associate has obtained leading-edge experience in VoIP and has a broader range of both personal and business skills through the KTP training courses. He has been able to practice these skills within the company.

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE COMPANY PARTNER

What **new knowledge and capabilities** have the company and its staff acquired as a result of the Knowledge Transfer Partnership:

The consultative nature of the project meant that both partners were fully aware of the developments and any specific issues that may have arisen. These were discussed in the regular meetings between the academic and industrial supervisors and the associate. On that basis, it is fair to say that knowledge and ideas flowed in both directions providing an effective synergy for the company.

Inger states we need to be more specific

In particular, the sharing of information on softswitch platforms at the early stages was valuable, but in time the main area of expertise of value was on services and the issues surrounding their creation. This reflects the expertise of the university, and is reflected in their research output.

Mussy - any more specifics?

How has the Knowledge Transfer Partnership **improved the company's operations and its competitive position?**

From the outset, as set out in the original objectives¹, the company had a goal of creating a convergent service platform through its experience and analysis of the Internet / Telecomms market. Therefore, it was most important to bring to the market a working platform as soon as possible. This was achieved through the strategy of phased development. Despite the fact that further basic system improvement are necessary, it was the right decision to make a low key launch of the product and start experiencing the unforeseen pitfalls (technically and commercially) as early as possible so corrective actions could be taken.

The company will be seen as one of the frontrunners for offering IP_Centrex for SMEs – the target market.

Mussy - Inger asked that this last paragraph be more specific and provide evidence.

¹ Please see previous page and Associate's report.
March 2004

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

ALL BOXES TO BE COMPLETED (including 'NIL' or 'O' if appropriate)

RESULTS FOR THE COMPANY PARTNER- CONTINUED

Financial summary of total company performance whether or not related to Knowledge Transfer Partnership	Year prior to commencement of KTP	Most recent Annual figure
Sales turnover (£000's)	1,900	2,400
Percentage exports (by value)	0%	0%
Profit before tax (£000's)	120	(40)
Number of employees	32	41
Percentage of market share	Less than 1%	Less than 1%

Sales Turnover

Please **quantify** the **expected change** in annual sales turnover **resulting from your Knowledge Transfer Partnership**

N / A

and explain how they were affected by KTP.

Impact of project increased development costs and a small increase in TO – approximately £10,000 pa.

Exports

Please **quantify** the **expected change** in annual value of exports **resulting from your Knowledge Transfer Partnership**

£0

and explain how they were affected by Knowledge Transfer Partnership.

Profit

Please **quantify** changes in **profit** before tax which have been affected by your **Knowledge Transfer Partnership**

£1000

and explain how they have arisen (eg through reduction in stock or work in progress or increased sales or reduced costs).

Through increase in TO.

Please **quantify** changes in **annual profit** before tax which are anticipated over the 3 year period after completion of the **Knowledge Transfer Partnership** and which result from your **Knowledge Transfer Partnership**.

The increase is due the new products and not just through the KTP. **Inger wanted new products extracted.**

£50,000

IN CONFIDENCE

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE COMPANY PARTNER- CONTINUED

Please summarise how any increase in annual profits given on last box of page 4 relate to the following:

New Markets	50%
Increased Sales	50%
Improved Quality	0%
Improved Operations	0%

Describe any **future** changes in company performance due to the Knowledge Transfer Partnership.

No impact.

Inger suggested something more positive.

What **further impact** is the Partnership expected to have on the **company's financial performance**?

None foreseen.

Inger suggested something more positive - "work has been done, so what has been gained".

Please describe and quantify any **investments the company has made or will make** to implement the results of the Knowledge Transfer Partnership:

- **in plant, machinery and buildings**

£50,000

Description

value

Infrastructure to facilitate services

- **in employing new staff** (other than the KTP Associate(s))

2

Description

no of people

1 Developer and 1 operations engineer

- **in training staff**

0

Description *Mussy* - This was discussed at some length.

no of people

- **other**

0

Description

IN CONFIDENCE

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE COMPANY PARTNER – CONTINUED

Please describe and quantify any investments the company has made in **Research and Development** as a result of the Knowledge Transfer Partnership experience.

£0

value

Description

Not related to the project.

Discussion of r&D

Overall, how **significant are the results of the Knowledge Transfer Partnership** to:

- the company's **present performance**?

	X		
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High Med Low Nil

The partnership accelerated the introduction of service.

- the company's **future performance**?

		X	
--	--	---	--

High Med Low Nil

The company was taking this path with or without the KTP so the long term impact

Would be low. **Inger suggested this was re-phrased??**

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE KNOWLEDGE BASE PARTNER

How has the Knowledge Transfer Partnership contributed to the **development of the institution's staff**?

The project involved the introduction of leading edge communication technologies into the market place. The two academic supervisors have gained a greater insight into the business opportunities and constraints in such a project. It has also been a valuable opportunity for the academics to become more practically involved in softswitches.

How would you rate the importance of this effect?

	X		
High	Med	Low	Nil

How has the Knowledge Transfer Partnership benefited the **institution's research**?

The KTP has benefited our research in two ways. Firstly, the works by the associate on unified service architecture has allowed some new research ideas to be worked out. Secondly the nature of the project has led to the establishment of a VoIP facility within the university. This has proven valuable.

How would you rate the importance of this effect?

X			
High	Med	Low	Nil

How many **student research projects** have been established as a result of the Knowledge Transfer Partnership?

Under graduate projects: Post graduate projects:

What effect has the Knowledge Transfer Partnership had on the **institution's teaching** (eg in terms of curriculum development, case studies material?)

The associate has helped with a final year course on communications software. This is a final year option for students interested in systems. By its nature the course reflects the state of the art in the communications industry, and so it was very valuable to have the associate discuss the progress and nature of his work at EdNet.

How would you rate the importance of this effect?

	X		
High	Med	Low	Nil

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE KNOWLEDGE BASE PARTNER - CONTINUED

Has an IPR agreement been established between the Knowledge Transfer Partners?

X	
Yes	No

If yes, is it anticipated that any commercial benefits to either party will result in the agreement?

	X
Yes	No

If yes, please describe and quantify:

Mussy - any comments on this ...

At an early stage both partners agreed that the VOCAL softswitch would form a solid basis for the project. This software is open-source, that is, it is free and much that is developed (new functionality and code) is expected to be returned to the open-source community. Hence at the cost of getting a good springboard for the project, much of what is developed remains in the public domain.

This open-source "philosophy" tends to run counter to the traditional business model and limits the potential for IPR and its subsequent exploitation. Rather the gain (to the company) is having a fast-track to the creation of communication services and the resulting revenue stream. The potential for IPR revenue streams for the university however are restricted.

What **other benefits** have been gained by the knowledge base partner and its staff as a result of the Knowledge Transfer Partnership?

- 1) A deeper experience of VoIP and practical aspects of this, which will prove useful in future research. More specifically, the university has a much greater insight into:
 - Quality of Service, codecs and sound quality
 - Scalability and the VOCAL architecture
 - Billing issues
 - Service creation in a VOCAL context
- 2) A more realistic and improved laboratory environment
- 3) An MPhil student
- 4) EdNet have joined the department's Industrial Advisory Board, and has talked at the research seminar series held at the university.
- 5) The Associate has helped extend the material for a final year course option

IN CONFIDENCE

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

RESULTS FOR THE KNOWLEDGE TRANSFER PARTNERSHIP ASSOCIATES

Please put numbers in the boxes to show how many of the Associates employed on the Knowledge Transfer Partnership have received **higher degrees** as a result of their KTP work?

MPhil: MSc: PhD: MBA: Other:

How many more higher degrees are expected to be awarded to Associates as a result of the Knowledge Transfer Partnership?	<input style="width: 60px; height: 30px;" type="text" value="1"/>
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How many of the KTP Associates employed on the Knowledge Transfer Partnership were offered continuing employment by the company partner?	<input style="width: 60px; height: 30px;" type="text" value="0"/>
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How many KTP Associates accepted the company partner's offer of employment ?	<input style="width: 60px; height: 30px;" type="text" value="0"/>
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How many KTP Associates left the Knowledge Transfer Partnership before completing 21 months of their contract ?	<input style="width: 60px; height: 30px;" type="text" value="1"/>
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What are the main **job functions** of the KTP Associates permanently employed by the company partner?

Not applicable.

Of the **Associates not employed** by the company partner, how many were employed in each of the following fields?

Industry:

Education:

Other:

Don't know:

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

MANAGEMENT OF THE KNOWLEDGE TRANSFER PARTNERSHIP

Give details of the **membership of the Local Management Committee (LMC) and the number of LMC meetings held** to manage the Knowledge Transfer Partnership.

Seven in total.

Mr. C. Cameron (Associate)

Dr. A. Kurt-Elli (Chair)

Mr. M. Kurt-Elli (Industrial Supervisor)

Prof. E. H. Magill (Lead Academic, Secretary)

Mr. A. J. Mitchell or Ms. I. Mann (KTP Consultant)

Prof. K. J. Turner (Second Academic Supervisor)

Give details of **any changes in company, knowledge base partner and KTP Associate personnel** during the course of the Knowledge Transfer Partnership.

The lead academic and the second academic exchanged roles prior to formal commencement of the project. This has had no impact on the work.

The KTP consultant was originally Mr. A. J. Mitchell, however this in time changed to Ms. I. Mann, but more recently has changed back again. These changes have not been felt to have had any impact on the project.

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

MANAGEMENT OF THE KNOWLEDGE TRANSFER PARTNERSHIP - CONTINUED

Give details of any **changes in the value or the duration of the Knowledge Transfer Partnership** and explain the circumstances.

The programme was terminated after 18 months as the associate resigned to take up a post elsewhere. However good progress has been made and so a second associate has not been employed.

Explain any **difficulties encountered in managing the Knowledge Transfer Partnership**, their effect on the results and solutions adopted.

The university and EdNet are one hour apart by train, and so the recommended structure of meetings was not difficult to achieve. The project web site <http://www.cs.stir.ac.uk/access/> has been a useful resource, and has greatly simplified the handling of project documents.

Give your views on how **TTI has managed the scheme** and how it might be improved.

This has been both supportive and professional.

How might the **Knowledge Transfer Partnership be improved** from the user's point of view?

Perhaps there ought to be a greater emphasis for the Associates to accept certain responsibilities as skills increase through experience and training.

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

PUBLICATIONS

How many **papers** on the results of the Knowledge Transfer Partnership have been published (or are in preparation) in refereed journals, by:

- KTP Supervisors: - KTP Associates: - Jointly:

How many **other publications** have arisen from the Knowledge Transfer Partnership, written by:

- KTP Supervisors: - KTP Associates: - Jointly:

What other steps have been taken or are planned to **disseminate** the results of the Knowledge Transfer Partnership?

A couple of industry presentations were made at Stirling. Also **future research contributions to conferences and journals on VoIP service architectures are planned. More specifically, Computer Networks (Elsevier).**

FUTURE PROSPECTS

Do the partners have plans for **further co-operation**?

If yes, please describe:

X	
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Yes No

Mussy ... comments?

- Research seminars: both company presentations and company attendance to the seminar series
- Company to continue on the department's Industrial advisory Board
- Student projects
- Maintain a dialogue for future research collaboration

What plans does the company have for **further investment** to exploit the results of the Knowledge Transfer Partnership?

The company will continue to develop the services as per the original phased strategy and strengthen the sales and marketing activities through resellers.

KNOWLEDGE TRANSFER PARTNERSHIP FINAL REPORT

STATEMENT OF GRANT EXPENDITURE

Give an account of expenditure on the Knowledge Transfer Partnership. All figures are for the KTP contribution and **exclude industrial contributions** against each heading. These figures will inform the assessment process and, if necessary **may be only indicative**. Precise final figures are required when completing Schedule 3, which must accompany the final claim.

HEADING	KTP GRANT PROVISION (£K)	KTP EXPENDITURE (£K)
Contribution to Associate(s)		
Salary	29	25
Academic & Secretarial Support	13	9
Associate(s) Development	2	1
Travel & Subsistence	3	1
Equipment, Consumables & Other Costs	2	1
TOTAL DIRECT COSTS	49	37
Indirect costs	19	16
GRAND TOTAL	68	53

DECLARATION

We declare that this report is an accurate account of the Knowledge Transfer Partnership.

LMC Chairman:

Name

Signature

Date

Lead Academic:

Please return this report including the final reports from each KTP Associate to:

KTP Central Office, Brunel House, Volunteer Way, Faringdon, Oxon, SN7 7YR.

These must be received within one month of the end of the Knowledge Transfer Partnership.

If necessary confidential reports on behalf of individual parties may be submitted separately.
