

PREPARING A TECHNOLOGY BUSINESS PLAN

CASE 1 : NEW MATERIALS

HEPHAESTUS MATERIALS LTD

This booklet provides an example of a technology business plan. It is intended to illustrate the business planning process with help of a concrete example.

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PREPARING A TECHNOLOGY BUSINESS PLAN

CASE 1 : NEW MATERIALS

BUSINESS PLAN FOR HEPHAESTUS MATERIALS LTD

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1. EXECUTIVE SUMMARY

Hephaestus Materials Ltd¹ is a materials development company with major interests in the advanced ceramics field. The company is a manufacturer of carbon, transition metal boride and other hard materials.

Hephaestus materials sells advanced materials to a variety of industrial customers in the heavy engineering, aerospace, automotive and petrochemicals industries.

Hephaestus Materials has developed in conjunction with research partners, via a Community funded RTD programme, an advanced composite with the wear resistance of alumina but with the ductility and impact strength similar to hard steels. This material will have applications for wear resistant parts such as tools, digger teeth and materials handling equipment and has the tradename Unobtanium.

The original research work on Unobtanium arose as part of a need to improve the existing Hephaestus process for advanced ceramics. The level of scrap in most advanced ceramics processing is usually very high but by using the results of research the company has been able to reduce the level of scrap (and improve product quality) by 15%. This has resulted in a high level of productivity with existing machines and a saving which will be invested in the new venture for Unobtanium products.

The potential European market for this material is estimated at EURO 0.448 million in year XXX6², EURO 1008 million in year XXX7 and EURO 3.2 million in year XX11. The total market is estimated at EURO 10 million in Europe and EURO 40 million world wide by year XX15.

The total investment required by Hephaestus Materials for this project is EURO 200,000 over five years. The investment covers the following expenditure:

- **Purchase of one sintering and one hot isostatic pressing (HIP) machine**
- **Recruitment of commercial staff**
- **Training of a technical support team**
- **A marketing budget**
- **R&D development programmes**

The product will need to be presented to Hephaestus' existing clients who will need to evaluate the material. Design of the simpler components will take 12-18 months. Payback will be in year 4.

¹ Any similarity to existing persons or companies is purely coincidental

² For purposes of this case, we are in year XXX6.

2. THE MARKET

IAL Consultants have estimated the European market for advanced engineering ceramics at EURO 226 million in year XXX3 growing to EURO 390 million by year XXX8. The total size of the market is summarised in the following table:

Table 1. European Market for Advanced Eng. Ceramics

		Year XXX3 Tonnes	year XXX7 EURO million	% by value	year XXX8 EURO million	year XXX8 % by value
A12 03	(non-electronic)	3.100	125	55	175	45
A12 03	(electronic)	120	45	20	70	18
A12 03	(bioceramic)	15	8	4	15	4
PZT/PLZT	(piezoelectric)	15	7	3	10	2.5
Zr O2		120	8	4	15	4
MgO		20	2	1	5	1
SiC	(reaction bonded / infiltrated)	40	5	2	10	2.5
SiC	(sintered)	10	4	2	15	4
Si2 N4	(reaction bonded)	3	2	1	5	1
Si3 N4	(sinterec)	5	10	4	35	9
Sialons		5	10	4	35	9
TOTALS		3.453	226	100	390	100

Source: IAL Consultants

The projected growth rates of these materials are extremely high despite the fact that as with all new material developments the estimated breakthrough dates are extremely long. See below:

Table 2: Annual Average Growth Rate year XXX3 - year XXX8

A12 03	(non-electronic)	7
A12 03	(electronic)	10
A12 03	(bioceramic)	15
PZT/PLZT	(piezoelectric)	10
ZrO2		15
MgO		15
SiC	(reaction bonded / infiltrated)	15
SiC	(sintered)	30
Si3N4	(reaction bonded)	15
Si3N4	(sintered)	30
Sialons		30

Table 3: Estimates of Commercial Breakthrough Times

	Year (average)	Year (upper extreme)
• High temperature diesel engine components	XXX4	XX13
• High temperature gas turbine engine components	XXX9	XX25
• Low temperature wear resistant engine components	XXX2	XXX8
• Cutting tools	XXX1	XXX5
• Bearings	XXX3	XXX8
• Pump components	XXX1	XXX5
• Precision jugs	XXX1	XXX5
• Welding nozzles	XXX1	XXX5
• High temperature recuperators	XXX5	XX25

The mechanical wear resistant applications represent the single most important end user sector of the engineering ceramics market in Europe, accounting for some 45% of the total market value. The range of applications included: cutting and grinding tools, wire drawing cones and guides, bearing nozzles, burner nozzles, metal extrusion dies, welding pins and nozzles, pistons for metering pumps, plungers for high pressure pumps, precision balls and valves, seal rings for rotary pumps, shaft protection sleeves, sealing discs and cartridges for mixer valves.

However the share that advanced ceramics hold of the European wear resistant market is very small. The total European Market for cutting tools is estimated at EURO 2-3,000 million and the overall market for wear resistant materials could be as high as EURO 5,000 billion. Engineering ceramics hold between 0.5 and 1% of the total market for these applications with the balance being held by metal alloys such as manganese steel or high-speed steels.

Current projections of the European engineering ceramics market make no attempt to take account of any dramatic technical or marketing breakthroughs, which would create an altogether different scenario.

The reasons for this are purely technical. Existing engineering ceramics are still brittle, unpredictable and difficult to manufacture compared to metals. A considerable amount of research has gone into developing materials with the ductility, predictability and impact resistance of metals and anti-wear properties of ceramics. Hephaestus Materials have developed a class of “composite” ceramic materials, which display the best properties of both ceramics and tooling steels. This is a specialist category of products currently used in the aerospace, military and power generating industries. These materials are embryonic in terms of market growth and their value is about EURO 25 million p.a. and included such products as SiC and Si3N4 reaction bonded materials.

The main customers for Hephaestus are firms in the industrial tooling field and those making wear resistant metal parts for materials handling.

Number of Customers for Unobtainium Material

Sector	UK	France	Germany	Italy	Rest of Europe	Total
Cutting tools	10	10	20	24	10	74
Digger teeth / mining	3	4	5	5	5	22
Slides / jigs	112	110	110	112	105	549
Extrusion dies	5	5	10	10	0	30
TOTAL	130	129	145	151	120	675

In the cutting tools sector 10 firms control 50% of the total market. In digger teeth 10 firms control 70% of the market but in slides / jigs there is no dominant player.

Manufacturers of cutting tools have a wide product range including drill bits, milling inserts and knives. The initial application for Unobtainium will be for the replacement of inserts. These devices are quite small and are currently made from hard steels, polycrystalline diamond (PCD) and ceramics.

Unobtainium will fill the gap between high performance PCD and ceramic inserts and the steel tipped inserts. The total European market is estimated at EURO 320 million p.a. of which Hephaestus hope to capture a 1% market share within 5 years i.e. the same % sales of advanced ceramics today. Of the remaining markets digger teeth / mining is thought to be worth EURO 10 million. The level of penetration by Unobtainium is likely to be much higher because of fewer players and more demonstrable advantages. Hephaestus hopes for a 10% market share of specialist tips in 10 years. The markets for slides / jigs and extrusion dies offer good long term growth prospects but require more development work. The values of these markets are thought to be EURO 50 million and EURO 20 million p.a. respectively.

Customers for cutting tools have strict requirements from material suppliers. These include:

- **Demonstrated material performance (data sheets, efficiency studies, cost benefit analysis)**
- **High product consistency**
- **Delivery lead times of less than 1 week**
- **Customised tools for difficult materials**
- **Good technical support**

Such companies are not involved in long term projects or bespoke work. Quality, consistency, delivery and a proven level of performance are more important than problem solving. Strong marketing of a limited product range will be more important than developing a wide range of Unobtainium material grades and initially Unobtainium will fill a specific niche.

The Unobtanium material has the following advantages for customers:

- It has a price / performance level superior to its competitors
- It is more consistent compared to ceramics
- Standards shapes can be made rapidly ensuring quick delivery times
- Hephaestus has detailed technical and scientific data on the product and a strong technical team
- Unobtanium has been tailored to meet customer needs in the tooling industry
- Unobtanium meets internationally recognised standards

Unobtanium faces competition in ceramic metal matrix / ceramic inserts from the following firms.

Competitive Position Assessment *

	Companies				
	ABC	PDQ	XYZ	LOS	VIP
CATEGORY					
• Market share	F	S	S	S	S
• Pricing leadership	F	S	S	S	S
• Protected position	F	F	F	F	F
• Product line breadth	F	S	S	S	S
• Desirable brand names	F	F	F	W	S
• Breadth of customer base	F	S	S	S	F
• Total cost position	F	S	F	S	W
• Special business relationships	F	F	F	S	S
• Capacity / Location of the production	F	L	S	S	L
• Degree of integration					
• Forward	W	F	W	W	W
• Backward	W	W	F	F	S
• Technology position	F	F	W	W	S
• Technology capacity	F	F	S	S	S
• Management risk taking	S	?	F	F	F
• Management responsiveness	S	W	F	F	F
• Resource sufficiency	F	F	F	F	S
• Profitability	F	S	F	F	S

Rating system: (L) leader, (S) strong, (F) fair, and (W) weak

This table shows that there is no clear leader in this field and that equal participation exists. In certain niches there are leaders in each niche. The competitor ABC is most vulnerable to competitive incursions given its small size and it is probably less able to raise prices. Of the firms evaluated none appears to have a clearly secured position by virtue of patents, know-how, outstanding distribution or other business aspects.

Also no single competitor provides all the products and services demanded by the industry. Only VIP with their VIPER product has a brand name, which is identifiable. Each firm has a reputable name but not associated with a strong leadership position. While brand names may be of some importance the suppliers are more concerned with establishing and maintaining a viable customer base of growth. PDQ, XYZ and LOS enjoy a superior cost position because of their size and multiple plant location.

* Against performance ceramic metal composites competing with Hephaestus

Multiple location allows for the establishment of special business relations and many buyers like the fact that they are dealing with the “biggest in the business”. VIP is perceived, as having the strongest technology position as a result of its resources for R&D but this is not thought to be decisive.

Hephaestus’ marketing strategy is to offer Unobtanium to niche markets in the cutting tool field in local markets to establish a viable product history and to compete in the added value tool field initially exploiting the weaknesses of ABC, PDQ, and XYZ. Emphasising the superior technology of Hephaestus compared to VIPER would not bring long term benefits since customers are more interested in other business factors.

3. THE PRODUCT AND PROCESS

Hephaestus Materials has developed a range of “metal matrix” composite materials, the “Unobtanium” range based on a steel matrix and titanium carbide and titanium boride fillers. Using a manganese steel matrix and a TiB₂ / TiC filler, impact wear rate better than Nihard and equivalent to Steel/TiC materials has been achieved.

The use of metal matrix composites has been largely limited to specialist applications in the aerospace, high performance and military sector e.g. tank armour. Hephaestus have extended the principle to the production of low cost medium value parts by means of:

- **Novel material combinations**
- **Advanced manufacturing and improvement of existing material**
- **Detailed market analysis**

The materials produced have equivalent or superior properties to several commercially available wear resistant composites and ceramics. Hephaestus has improved existing carbothermic and hot isostatic pressing (HIPing) processes for manufacturing small to medium sized parts by working in conjunction with partners in the Community RTD Programme research project.

Hephaestus has already made use of the technology in a process upgrade for its advanced ceramics lines. Using Unobtanium in the “green machining” of the ceramic blanks and the high pressure chamber of the hot isostatic pressing machine has resulted in a major reduction in tool wear and lower scrap levels for finished and semi-finished products. The company is able to reduce costs in the following ways:

- **lower unit costs per item**
- **lower planned maintenance levels and reduced level of indirect labour**
- **lower machine tool inventories**
- **lower raw materials**
- **fewer quality inspections**

Overall savings for these two process innovations are likely to be worth a 15% increase in profits before tax which means a year XXX7 pre-tax profit figure of EURO 421,000 on a turnover similar to year XXX6

Moreover these savings will be worth over EURO 250,000 over five years which is equivalent to the cost of replacing 1 of the current 5 production machinery lines.

Also Hephaestus has commissioned an extensive market research programme of both its existing customers and potential new clients for these materials. Under the existing Brite / Value programme Hephaestus will be looking to licence the process improvements.

Detailed market research shows that customers are prepared to pay up to 41% more for an Unobtanium type product.

USP Value

	% Increase Value Over Steel
Faster cut out	15
High batch quality	3
Long tool life	18
Faster delivery	5
TOTAL	41

It is unlikely that Hephaestus can supply Unobtanium more quickly than suppliers of standard steel inserts but it should be possible to match existing firms.

It is clear that Hephaestus should concentrate on the market for inserts as a first step. Second and third grade material instead of being scrapped can be promoted to manufacturers of digger teeth and wear parts who do not have such tight specifications.

4. THE BUSINESS OF HEPHAESTUS MATERIALS

Hephaestus Materials is a supplier of specialist materials to the metal working industry and were part of the original research team under the Community funded RTD programme. The company is based in the UK but has licensee's worldwide for its range of carbons and hard ceramics.

The main aim of the company is to develop and supply high quality ceramic/composite materials to a wide range of specialist customers.

Company Reg. No: 0031726711, Incorporated year XXX0
EURO'000

Date of Accounts	year XXX6	year XXX5	year XXX4
Turnover	4,274	3,686	2,649
Profit before Tax	366	266	-13
Fixed Assets	1,829	1,739	1,803
Current Assets	1,157	1,094	775
Current Liabilities	1,037	1,070	689
Shareholders Funds	1,671	1,492	1,365
Capital Employed	1,949	1,763	1,889
ROCE %	18.8	15.1	-
ROT %	8.6	7.2	-

As can be seen from the accounts Hephaestus has been trading steadily ever since 1988 when it won major long-term orders for military ceramics. Since then the company has traded steadily and profitably but it requires more capital to take advantage of Unobtanium developments.

Hephaestus Management team are as follows:

MD & General Management:	P.W. Gross, 18 years business experience, Manythings Plc. Previously managing director of Wear'n'Tear Plc.
Technical Director:	Dr. Erebus, 8 years Technical Director Patently Brilliant Inst. Research Manager of Cerebral Inc. (manufacturers of high technology products)
Finance Director:	Mr U. Heep, 4 years partner of Psycho Accountants, 10 years at Pastit Equipment Co.
Marketing Director:	Mr A. Bonus, formerly sales manager of Metropolis Military. 5 years business manager at Big Rockets & Tools Ltd.

Current staff

	N° of Employees
Management	4
Research	10
Production	16
Sales & Administration	10
TOTAL	40

As a result of this new venture the following additional establishment will be required.

Unobtanium Manpower Requirements

	year XXX7	year XXX8	year XXX9
Capital Equipment	1.5*	2.5	2.5
Cutting Tools Development	1.0	1.0	1.5
Other Development	1.0	1.0	1.5
Sales to Cutting Tools	2.0	3.0	3.0
Sales for Others	0.5	1.0	1.0
Process engineering	2.5	2.0	0.5
TOTAL	8.5	10.5	10.0

* Staff to operate capital equipment will not be required until 2nd half of year XXX7.

Unobtanium Competitive Assessment

Category	Companies					
	Hephaestu s	ABC	PDQ	XYZ	LOS	VIP
Protected Position	S	S	F	F	F	S
Product Line Breadth	L	W	W	W	W	L
Product Line Differentiation	L	S	W	W	W	L
Desirable Brand Names	S	W	W	W	W	S
Total Cost Position	F	S	S	F	S	W
Capacity / Location of Prod	W	F	L	S	S	S
Technology Position	L	F	F	W	W	S
Technology Capacity	L	F	F	S	S	S
Congruency with Competition	L	S	F	F	F	S

Rating System: (L) leader, (S) strong, (F) fair, and (W) weak

Hephaestus has the strongest patent and know-how position along with ABC & VIP. Hephaestus is, along with VIP, the leading firm in terms of product line and desirable brand name.

Hephaestus is fairly weak in terms of total cost position but the investment programme outlined will remedy this. Investment in the new plant and training of a sales team will place Unobtanium in the position of dominance within three years.

The aim of Hephaestus is to become the leading supplier of ceramic composites for the cutting tools market in Europe. This implies manufacturing materials for its customers that offer improved cost performance, quality and consistency.

5. THE MARKETING STRATEGY

The unique selling points of Unobtanium have already been listed but effectively they offer better tool life and faster cutting speeds. Unobtanium materials are perceived to fill a niche between expensive PCD tools and cheaper throwaway metal or tungsten carbide tools. They are speciality products used for those projects which do not justify the purchase of expensive diamond tools but where metals do not have the performance.

Both diamond tools and metal tools are sold in fairly high volumes but the production of Unobtanium will have to be limited for the short to medium term. Unobtanium will be targeted to those areas with specific technical problems using conventional tools at a price just below the more expensive existing systems. Unobtanium will be differentiated by its superior performance, its niche application and by superior technical service.

Hephaestus Materials aims to get maximum benefit by selective advertising and sales promotion and by using the prestige gained through Community funding. Workshops and seminars will be set up in conjunction with industrial partners and a “customer service” manager will be allocated to key accounts.

Hephaestus feels that many of its competitors have focused on the technology of advanced ceramics. Hephaestus will stress the customer benefits in terms of cost performance. A study of all customer costs and the product unit costs will be prepared in order to assist the value-added strategy for Unobtanium.

6. MANUFACTURING

The production of Unobtanium will take place at existing Hephaestus premises but more administration space will be required rented for adjoining premises. The total equipment demands are:

	Cost EURO
One sintering machine	60.000
One HIP machine	40.000
Testing equipment	10.000
TOTAL	110.000

The new equipment will be modified to take into account the process innovations from Unobtanium, which provide a 10-15 % improvement over existing machines mentioned previously.

Further equipment will be purchased in year XXX9 in order to double production capacity from EURO 1,500,000 p.a. to over EURO 3,000,000 in year XX11.

Expected order lead times are thought to cover 2 weeks for inserts and one to two weeks for digger teeth and slides.

Existing laboratory and R&D facilities will be used as far as possible for year XXX7. Field trials will be carried out at the customer's premises or subcontracted to independent research bodies, e.g. Universities.

The use of Unobtanium is a good example of synergy and spin-offs from exploiting production and processing technologies.

Annual manufacturing costs for Unobtanium

Unobtanium Range (at 80 % plant	EURO 000
Raw materials	68,400
Energy	1,000
Fixed Cost	60,000
Utilities	1,000
Capital charge	7,200
Labour	136,320
TOTAL	273,920

There are no special environmental or safety hazards to be accounted for.

The independent valuers Beancounters Ltd. using sophisticated management and cost accounting techniques not described in this plan developed these cost estimates.

The existing top management team at Hephaestus remains but a sales manager will operate the plant for Unobtanium and production development manager will be appointed to run the day to day business. The sales manager has yet to be appointed but the current deputy R&D manager Mr Calculus will take over the production development department full time.

7. FORECASTS OF SALES, CASH FLOW AND BREAK-EVEN

Sales Forecast

EURO 000	Year XXX7	Year XXX8	Year XXX9	Year XX10	Year XX11
Cutting tools					
• Mills	200	400	800	1,100	1,200
• Inserts	150	300	600	1,050	1,150
• Discs	50	150	150	150	250
• Blades	48	158	160	264	300
Digger teeth			200	300	300
	448	1,008	1,910	2,864	3,200

Sales Concentration

EURO 000	Year XXX7	Year XXX8	Year XXX9	Year XX10	Year XX11
UK	448	608	1,110	1,500	1,600
France		200	250	450	550
Benelux		100	200	350	350
Germany		100	250	400	500
Others			100	164	200
TOTAL	448	1,008	1,910	2,864	3,200

Firm orders for mills and inserts have been placed by Grindup, Abrasive'n'Boring Co and Rubemwrong at EURO 1,000 p.a. each while discs have been ordered on a sale and return basis from 5 customers. The independent management consultancy firm, IAL Consultants, in London has carried out the initial market research into the cutting tools and advanced metal matrix composites market for Hephaestus.

Hephaestus will update the sales forecast on a quarterly basis in-house and commission further market research from IAL Consultants in Year XXX8.

Hephaestus Unobtanium Year XXX7 Cash Flow

Inflow	1	2	3	4	5	6	7	8	9	10	11	12	Total
Sales	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	448,008
Parent Company													
Capital	50,000												50,000
Other Capital	60,000												60,000
Investment													
Capital	100,000												100,000
	247,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	37,334	658,008
Outflow													
Capital Expenditure		110,000											110,000
Raw Materials	11,400		11,400		11,400		11,400		11,400		11,400		68,400
Labour	11,360	11,360	11,360	11,360	11,360	11,360	11,360	11,360	11,360	11,360	11,360	11,360	136,320
Rent	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000
Rates	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Advertising	2,000			2,000			2,000	2,000		2,000			8,000
Overheads	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
Administration	800	800	800	800	800	800	800	800	800	800	800	800	9,600
Loan interest	600	600	600	600	600	600	600	600	600	600	600	600	7,200
	36,160	132,760	34,160	24,760	34,160	22,760	36,160	22,760	34,160	24,760	34,160	22,760	459,520
Net inflow/ (Outflow)	211,174	(95,426)	3,174	12,574	3,174	14,574	1,174	14,574	3,174	12,574	3,174	14,574	198,488

8. MANAGEMENT CONTROLS OF THE BUSINESS

The management of Hephaestus intends to set up a special Unobtanium working group with weekly meetings to discuss progress and systems with targets for sales, production, quality, customer services, marketing and distribution roles. The financial controls will follow the business plan projections, which have been set out as follows:

Pro Forma Profit and Loss Account for Year to 31 December

Unobtanium Materials EURO 000	Year XXX7	Year XXX8	Year XXX9	Year XX10	Year XX11
Sales income	448	1,008	1,910	2,864	3,200
Cost of goods	274	614	1,166	1,748	1,952
Gross Profit	174	394	744	1,116	1,248
Expenditure					
Administration/ Distribution	10	56	60	60	80
Rent & Rates	60	120	210	210	210
Advertising	8	16	28	40	40
Overheads	60	120	210	210	210
Depreciation	22	22	44	44	44
Interest	14	16	36	36	36
TOTAL	174	350	588	600	620
PBIT (Profit before interest and tax)	0	44	156	516	628
Taxation	0	14	56	110	160
Profit after tax	0	30	100	406	468
Gross %	39	39	39	39	39
Total expenditure %	39	35	31	21	19
Profit before Tax %	0	4	8	18	20
ROI %	0	14	48	1.88	2.27
Gearing %	67	24	17	11	8

Note to the P & L Accounts. The NPV calculations for Unobtanium are reproduced in a separate report but they show a positive result and on this basis project will proceed.

Pro-forma P & L Sensitivity Analysis Sales Down 20 %

December 31

EURO 000	Year XXX7	Year XXX8	Year XXX9	Year XX10	Year XX11
Sales income	358	806	1,528	2,291	2,560
Cost of goods sold	216	491	932	1,398	1,561
Gross Profit	142	315	596	893	999
Expenditure					
Administration/ Distribution	10	56	60	60	80
Rents & Rates	60	120	210	120	210
Advertising	8	16	28	40	40
Overheads	60	120	210	210	210
Depreciation	22	22	44	44	44
Interest	14	16	36	36	36
TOTAL	174	350	588	600	620
PBIT (Profit before interest and tax)	-32	-35	8	293	379
Taxation	0	14	56	100	160
Profit after tax	-32	-35	8	193	219
Gross %	39	39	39	39	39
Total expenditure %	48	43	38	26	24
Profit before Tax %	(9)	(4)	0	13	15
ROI %	-	-	-	91	104
Gearing %	67	24	17	11	8

Note: This assumes that R & D expenditure is written off as incurred.

Mr U Heep will hold the responsibilities for the accounts while the auditors will be Beancounters Ltd.

The Hephaestus MD and General Manager Mr Gross will modify the existing operations control systems used at Hephaestus.

9. THE REQUIRED FINANCIAL PACKAGE

Hephaestus Materials has a long history of producing high quality ceramics for specialist customers. As a result of a major military funded R & D programme the company grew rapidly by selling high quality military ceramics. By December of year XXX6 profits had risen five times over five years and growth is expected to continue despite military cutbacks.

At the same time Hephaestus in conjunction with other partners developed Unobtainium via a Community funded RTD. Although Hephaestus will receive further promotional assistance from the EU via these programmes the company wishes to exploit the Unobtainium technology.

To do this Hephaestus requires up to EURO 210,000 over three years for a capital investment programme. The first EURO 110,000 of investment is required in year XXX7 while the remainder required to increase overall capacity and meet projected demand is required in year XXX9.

If sales do not reach the required level at the end of year XXX8, the 2nd phase of the investment programme will be postponed by one year.

Hephaestus intends to raise the required capital for the Unobtainium project in the following ways:

	EURO
Investment by Hephaestus	50,000
New Share Capital	60,000
Loan Capital (overdraft)	100,00
TOTAL	210,00

The financing programme is extremely conservative and covers all the first year's operations in full. Unobtainium is a unique product and Hephaestus is hoping for a 1% market share in a business worth EURO 390 million by year XXX8. Even with sales at 20 % below projected levels Unobtainium would make profits by year XX10.

The Hephaestus Company offers security on the loan capital in terms of the machinery and guarantees.

Preparing a Technology Business Plan

Case 1 : New Materials
Hephaestus Materials Ltd.

For more info :
www.gate2growth.com



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