

ChemQuest TechValuSM – Extracting value and growth from R&D

Are you spending your money on the right R&D? Will your R&D investment yield the profit growth objectives of your enterprise in the next 3-5 years?

We can provide you with an external, unbiased assessment of where to spend your technical resources most profitably.

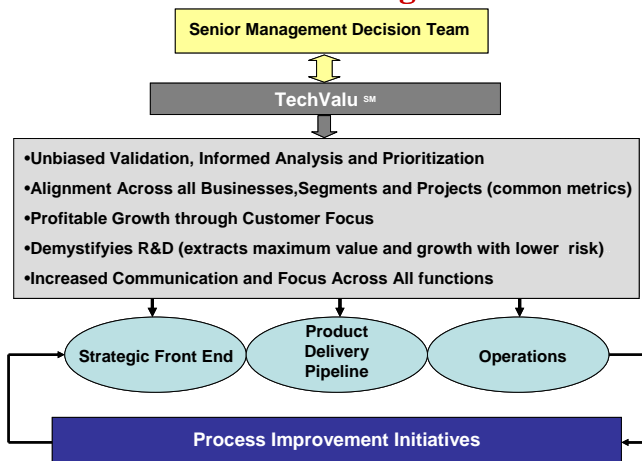
ChemQuest TechValuSM will demystify your R&D process. ChemQuest TechValuSM is a proven process that will extract the maximum value and lower the risk of your investment in R&D by aligning your projects with your corporate growth initiatives. Particular emphasis is given to incorporating the [voice of the customer](#), not only to understand the product requirements, but also the total economic equation. In addition, the process considers the sustainability of profit through a thorough evaluation of your [competitive position](#). Since the TechValuSM process requires input and discussion across all business functions, the resulting focused prioritization of projects builds energized teams with real time communication tools to monitor the success path.

The ChemQuest TechValuSM process involves an analysis of each business, business segment and project using a [proprietary scoring model](#) that evaluates a number of proven [critical success factors](#). These will include the client's own financial metrics. This process ensures that all evaluations are based on the same [uniform set of criteria](#) and provides the alignment that allows [portfolio management](#) across all business units. A [strategic technology plan](#) is developed, as a result, that takes into account business opportunities that lie both within the current core and in potential new growth areas. The ChemQuest TechValuSM analysis also provides input to the development of the appropriate [business model](#).

The results are not simply a snapshot of today, but measure [real time R&D impact](#) for business teams at multiple levels. No more 3 year plans that are filed and forgotten. Both the CEO and the R&D head will now have a daily dashboard insight as to where to most profitably spend their time.

ChemQuest will facilitate all analyses and provide an independent assessment of [growth opportunities](#) based on primary research. This gives an additional, external, validation to the decisions taken on the basis of the internal evaluation and helps mitigate the risk inherent in portfolio management.

Sustainable Growth through New Products



[See following pages for linked additional information](#)



ChemQuest TechValuSM

Our TechValuSM process will:

- Integrate all businesses, segments and projects under one corporate strategic platform
- Manage a portfolio of varying business segment opportunities to the best advantage of the overall company
- Analyze and allocate technology resources based on market potential and competitive advantage to maximize corporate profit objectives

ChemQuest TechValuSM *Extracting value and growth from R&D*

TechValuSM is part of ChemQuest's Profitable Growth Program and is integrated with other processes such as New Business Design and Product Innovation

Our TechValuSM process demystifies and maximizes the profit growth potential of your R&D by aligning new product development with your corporate growth opportunities. The best projects are then prioritized across all business segments, increasing corporate focus and lowering risk. All business teams are fully involved so that decisions about R&D projects are supported by your entire organization. This increased emphasis on the agreed priorities ensures that key projects are commercialized quickly with financial impact.

Our TechValuSM process performs three essential functions, it:

- ➔ Analyzes key formulative and component technologies
- ➔ Analyzes and prioritizes strategic alignment of major development projects
- ➔ Establishes a portfolio of development projects for sustained growth and provides a living metrics dashboard showing real time progress



Voice of the Customer

In order to be sure that you are working on the right product development project it is essential to understand what the customer wants to do and how your product will be used. There are a number of processes available to help define product requirements such as the House of Quality of the Quality Function Deployment method. It is important to identify the product attributes needed by the customer and to relate these to the necessary product performance characteristics. This process will help to select the most appropriate technology for the application and provide guidance as to how the technology can be optimized for the particular application.

In addition to analyzing the product requirements, ChemQuest also considers the value of the product to the customer as one of the critical factors considered in the project evaluation. Understanding the value chain allows the maximum value to be obtained from the product offering.

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Competitive Position

In order for a new product introduction to be successful you must have a competitive advantage over your major competitors. This may come from a product performance advantage, a cost advantage, or an advantage from your protectable technology assets. Understanding your technology strengths is essential for selecting the best growth opportunities providing a sustainable competitive advantage.

Formulative and Component Technologies

The analysis of key formulative and component technologies provides an understanding of the technology strengths that lead to differentiated products and a strong competitive position

Formulative Technology: a technology platform for a group of products that are compounded from similar classes of raw materials using the same (or similar) manufacturing processes. Examples include: waterborne, solventborne, hot melt, etc.

Component Technology: those key components of a formulative technology that provide the opportunity for product differentiation and a competitive advantage. Examples for WB Neoprene are: neoprene latices, resin emulsions, rheology control agents, stabilizers, etc.

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ChemQuest's Business Analysis Scoring Model

The analysis of each business, business segment and project is performed using an Excel-based tool developed by ChemQuest. The tool is first customized by including the financial metrics used by the client and by setting the appropriate ranked ranges and weighting factors.

The summary worksheet (part of which is shown below for a project) shows the raw scores for all the critical factors and calculates the overall weighted score which reflects the overall value to your company

Business Analysis Worksheet - Projects

Segment:
Project:

Note: Enter data only in yellow colored cells.
Spreadsheets are linked, totals will be entered on Summary spreadsheet automatically.

Critical Factor	Raw Data	Ranked Ranges	Value from Ranked Range	Weight	Score	Responsibility	Comment
1 Profit Projected		>\$3.5MM = 5	0	20%	0		
		>\$2.8MM = 4					
		>\$2MM = 3					
		>\$1MM = 2					
		>\$0.2MM = 1					
		<\$0.2MM = 0					
2 Value to Customer (End User) (Total 140)	0	>120 = 5	0	15%	0		
		>100 = 4					
		>80 = 3					
		>60 = 2					
		>40 = 1					
		<40 = 0					
3 Competitive Advantage (Total 130)	0	>110 = 5	0	15%	0		
		> 90 = 4					
		> 70 = 3					
		>50 = 2					
		>30 = 1					
		<30 = 0					
4 Sales Projected		>\$10MM = 5	0	10%	0		



There is a worksheet to evaluate each of the critical factors used in the analysis and these are linked to a summary worksheet that calculates the overall rating.

ChemQuest will facilitate the scoring of all worksheets to ensure the uniform rating across all business segments. For example, the Competitive Advantage worksheet is shown below

Business Analysis Wks - Competitive Advantage

(Fill out this worksheet from your perspective)

Equal to competition scores zero

Segment:

Project:

Strongest competitors:

Critical Components	Range	Score	Rated By (Initials)	Documentation
1 Do we have a low cost advantage vs.our competitors?	0-30			
2 Do we have a customer recognized product performance advantage over our competitors?	0-30			
3 Is our product technology protected with patents, trade secrets, know how, Brand Name, or contracts?	0-20			
4 Do we have a customer recognized performance technical capability, sales, marketing, or technical service?	0-20			
5 Are there gaps in our product offerings? (no gaps - high score)	0-15			
6 Percent of Current Products That Are "Me Too" <60%=15; 75%= 10; 90%=5; 100%= 0	0-15			
Total Score	130	0		

The output may be displayed in several ways to show the ranking of all businesses, business segments and projects, or the alignment of projects with business segments and businesses.

Business Unit	Value to Customer	Competitive Advantage	Technical / Commercial Feasibility	Market Attractiveness	Strategic Fit	Financials	Total Score
Business 1 (Current)							215
Business 1 (TechValu Projected)							305
Segment 1 (Current)							295
Segment 2 (Current)							265
Segment 3 (Current)							195
Segment 1 (TechValu Projected)							330
Segment 2 (TechValu Projected)							345
Segment 3 (TechValu Projected)							280
Project 1							380
Project 2							345
Project 3							305
Project 4							280

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Critical Success Factors

Profitable growth through new products involves understanding and managing three key activities:

1. Extracting value from your R&D effort
2. Commercializing differentiated new products
3. Succeeding at product innovation

These areas have been extensively studied over the past 30 years and there now exists a large body of knowledge on these subjects. In particular, the critical success factors for obtaining profitable growth through product innovation have been elucidated.

The following 5 are generally accepted as being the most important, and we have successfully used them in our evaluation of growth opportunities with many clients of varying size.

1. **Value to the customer.**

What's your value proposition that will make customers prefer to buy your product over the competition? Which improvements over previous products will customers enthusiastically reward with premium prices?

Critical Success Factors

1. **VALUE TO YOUR CUSTOMER**
2. **COMPETITIVE ADVANTAGE**
3. **MARKET ATTRACTIVENESS**
4. **STRATEGIC FIT**
5. **TECHNICAL/COMMERCIAL FEASIBILITY**
6. **FINANCIALS**
(For example; %Profit, Profit growth, IRR, % New Product Sales, Total sales growth,etc)

2. **Competitive**

Advantage. Do you have a sustainable competitive advantage over your competition? Is your product differentiated from competitive products in the eyes of the customer? What strategies will you use to establish a strong, favorable, competitive position?

3. **Market Attractiveness.** Are the overall industry dynamics favorable? Which customers will provide the most favorable foundation on which to build a successful business? Does the market segment provide an opportunity to obtain the desired sales and profits?

4. **Strategic Fit.** Does the opportunity fit with your overall strategic direction and with your current abilities, capabilities and resources? Which activities required to design, produce, sell and distribute your product should you do internally and which should you rely on partners and suppliers to provide?

5. **Technical / Commercial Feasibility.** What is the overall probability of success (technical and commercial) of launching a profitable new product?

In addition to these factors any evaluation of a new product opportunity should include the necessary financial factors, typically sales (dollars and growth) and profits (dollars and growth). We include one additional financial factor, the **Cost Attractiveness**, which is a measure of the total cost to develop and commercialize a new product. These critical factors essentially perform a Real-Win-Worth analysis for the growth opportunity.

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Uniform Set of Criteria

In order to compare projects across business segments it is essential to use a scoring model that uses a uniform set of criteria for the various critical success factors. This is achieved in our Business Analysis tool by fixing ranked ranges for each critical factor and by setting weighting factors. Once fixed this set of criteria is used for all evaluations. (Note: in general it is necessary to have different ranges for the sales and profit dollars of business segments and projects).

Our proprietary analysis process uses 5 Critical Success Factors and is customized to include client's financial metrics. The client also determines the appropriate Ranked Ranges and Weighting Factors used in calculating the scores. For example:

Critical Factor	Raw Data	Client Selected Ranked Ranges	Value from Ranked Range	Client Selected Weight	Score
% Earnings Growth		>20%=5 >15%=4 >10%=3 >5%=2 >2%=1 <2%=0	0	20%	0

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Portfolio Management

An essential part of extracting value and growth from R&D is effective R&D portfolio management which provides:

- Alignment with strategy
- Portfolio balance
- Verifies project priorities across all business segments
- Identifies technology imperatives
- Provides input to project management

The outputs from the business analysis and the technology analysis provide the necessary information to allow the selection of the highest priority projects and to ensure their alignment with business growth objectives. The identification of growth opportunities provides direction for longer range technology development.

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Strategic Technology Plan

The alignment of R&D projects with business growth initiatives is an important part of your strategic technology plan. It addresses the issue of extracting value and growth from your R&D. However, it is also important to identify those key components of your technology that need to be developed and improved to sustain future growth. Decisions about how you will pursue new business opportunities will influence the direction of your longer range technology plans. Another key element is resource allocation and how you will provide both shorter-term support to business growth and longer-term support for technology development.

TechValuSM Delivers a Prioritized, Unbiased, Project Portfolio for Profit Growth

Specific Deliverables:

- Customized Business Analysis Model
- Unbiased, Informed Evaluation of Business Units, Business Segments and Key Projects
- Analysis of Formulative and Component Technologies
- Prioritized R&D Project Portfolio for Maximized Value and Growth

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Business Model

Five key strategic dimensions are critical to creating a high value, sustainable business model:

- Customer Selection and Value Proposition
- Value Capture/ Profit Model
- Strategic Control
- Scope
- Organizational Systems

Customer Selection and Value Proposition – Who pays the bills?

What high value customer opportunity am I targeting and with what unique and differentiated customer proposition? What customers represent the most attractive opportunity and how will I serve and interact with them in a uniquely valuable way? What value sector or market segment am I targeting? Why will customers buy my product or services?

Value Capture/ Profit Model – What is the customer paying for?

What profit model will I bring to capture value from this customer? How do I make money with these selected customers? What is my value capture mechanism by profit model relationship?

Strategic Control – How do we protect our profits?

How will I maintain dominant control of this profits stream versus competitors? How will I maintain a sustainable dominant position versus competitors with these customers?

Scope – What do you do?

What scope of activities and assets are required? What critical value chain activities are required? Which activities to outsource vs. own? What activities and offerings are required to serve customers, provide for value recapture and ensure strategic control?

Organizational Systems – What is needed to make it happen?

What organizational characteristics and systems are necessary for competitive success? What are the key functional skills are important processes that are required? What critical capabilities and organization structure do I need to build to ensure successful implementation?

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Real Time R&D Impact

The business analysis tool provides you with the opportunity to have a real time view of your major development projects. Since it is easy to update project information as changes occur, it is possible to keep track of changes to the scoring of each of the critical success factors. Management can see at a glance what has caused a significant change and where to focus attention to correct problems as these arise. This is essential to keep projects on focus and on time.

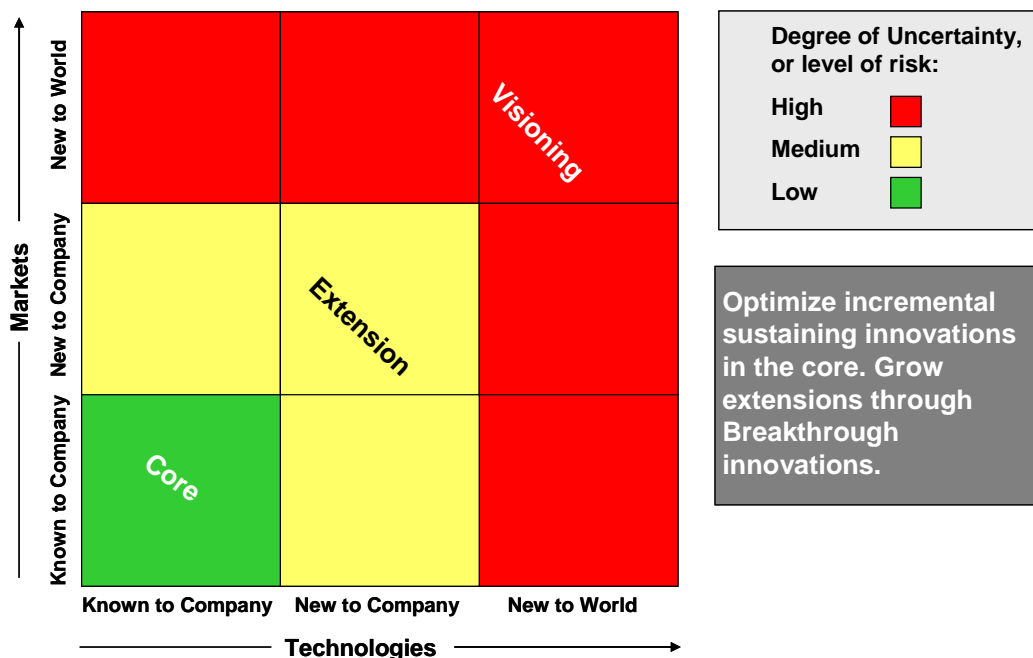
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Growth Opportunities

Once the business model has been identified it is necessary to develop a plan to implement the realization of the growth potential. ChemQuest can use its knowledge of the industry and its proprietary databases to recommend viable growth opportunities. In doing so we will take into account the total opportunity space available, including opportunities outside your current core business. This provides an external perspective that will help to mitigate the risk of your R&D investment decisions made on the basis of the internal analysis provided by TechValuSM.

Portfolio of Business Opportunities



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