

# Transitioning from Industry to a Successful Chemical Consulting Business

**Dr. Joseph V. Porcelli**  
**President and Principal**  
**JVP International, Inc.**

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# My Objectives for This Talk

- To describe what I think it takes to be a successful consultant
- To indicate what role the Association of Consulting Chemists and Chemical Engineers, Inc. (ACC&CE) has played in my success
- To demonstrate what I did along the way to develop my consulting practice

# Who am I addressing?

- Established consultants seeking to improve their businesses
- Consultants just starting out
- Those evaluating consulting as a second career
- Those just curious about consulting
- Those whose organizations use consultants
- Those whose organizations may need a consultant at some point in the future

# My Expectations regarding Entry as a Individual Consultant

- Second half of my career I had high visibility with top level executives of client companies of Scientific Design
  - “Call us when you start consulting”
- I had 20+ years of experience in Technology and General Management
  - Should translate into many management consulting opportunities

# The Realities of My first Two Years

- Retainer from previous employer
  - Two years – they paid for 25 days/year
  - I had to sign 4 year “non-compete” agreement
  - Heavy use first six months – then almost nothing
- “Call us when you start consulting”
  - Follow up on many world-wide contacts – very few positive results
- Overcoming 9-11
  - Emotional impact
  - Severe drop-off in business

# I arrived at the following Characteristics for a Successful Consultant

- Marketable Expertise
  - Functional - R&D, Sales & Marketing, Engineering, Operations, General Management
  - Technical – Catalysis, Process Simulation, Process Control, Pilot Plant Design and Operation
- Communication Skills
  - Written – reports, instructions, publications
  - Oral or verbal –
  - Digital

# What Personal Qualities does it take?

- Self-confidence
- Self-starter
- Curiosity
- Willingness to work
- Ability to communicate

# I then reviewed my career, selecting areas of potential marketable expertise

## Important Career Experiences - 1

- Assigned to start up EO pilot plant built to counter threat of competition
  - Learned plant operation, responsible for first process GC used in EO technology
- Extensive plant start up and trouble-shooting activities including accident investigation and flammability testing

## Important Career Experiences - 2

- Managed EO pilot plant operation and associated research programs for:
  - Next generation catalysts
  - Process development and improvement, culminating in conversion of plants from air to oxygen feed
- Managed development section working on new ethylene glycol technology and other processes

## Important Career Experiences - 3

- Managed Catalyst Development subsidiary as GM – attended exec program
- Spent 2 years on Acetoxylation Startup
- President of Halcon during downsizing and shutdown
- Managed ChemSystems' PERP program
- President of Scientific Design Company while owned by Linde AG

# Start up of JVP International, Inc.

- What services will I offer?
- What should I name my consultancy?
- Should I consider a website?
- What corporate structure should I form?
- How should I market my services?

# What services will I offer?

- Why is it important to decide this up front?
  - You must be able to clearly explain what you can offer to anyone who asks
  - Elevator speech
  - Networking
  - Marketing material
  - Can influence name of business, domain name, etc.
- My experience and my conclusions
  - Generalities do not sell
  - Technical expertise is very important
  - You must market constantly, not just when you are not busy

# What should I name my consultancy?

- Need to decide early –
  - Business Name
  - Domain Name (website)
    - Use your own name
    - Use a name descriptive of your services
    - Use a “sexy” name
- My experience and my conclusions
  - Used initials
  - In retrospect, name descriptive of services would have been better

# Should I consider a website?

- You definitely need a web “presence”
  - More and more prospects use Google to search for consultants
- ACC&CE offers its members web pages – its site is very visible to search engines
- Other organizations offer opportunity for listings on their websites
- My experience and my conclusions
  - I have my own website
  - It and listings with others has greatly increased my visibility

# What corporate structure should I form?

I only considered Subchapter S Incorporation

- I am not a lawyer or accountant
- I wanted “panache” of “Inc.” to show seriousness.
- I found lots of information from:
  - Inc. Magazine articles and website
  - Other websites, magazines and books
- My recommendation - You should discuss with lawyer and accountant  
- there are pluses and minuses

# How should I market my services?

- Write letters and emails to your entire prospect list – but don't wait for responses
- Join some business and professional networking organizations
- Go to meetings
- Make presentations
- Write articles
- Network, network, network!

# Networking is the Key

- To let others know of your availability
- To be aware of what is happening in your industry sectors of interest
- To learn about opportunities
  - In areas of interest
  - In new areas which you could grow into

# Specific Suggestions -1

- Seek to become reviewer for the US Dept of Energy (DOE) or other government sectors sponsoring R&D, such as NSF, DoD, etc.
  - This acquaints you with new processes and products being researched
  - It allows you to become aware of both established and emerging organizations active in new product and process R&D
  - This allows you to meet other consultants and managers of R&D projects
- Join social media sites that emphasize business rather than social communications
  - I use LinkedIn, but you should consider Facebook, Twitter or others

# Specific Suggestions - 2

- Join one or more consultant networking organizations
  - The Association of Consulting Chemists and Chemical Engineers (ACC&CE) – [www.chemconsult.org](http://www.chemconsult.org)
  - Chemical Consultants Network (CCN) – [www.chemconsultants.org](http://www.chemconsultants.org)
- Seek out websites of organizations that look for expert technical or management consultants
  - CECON - [www.cecon.com](http://www.cecon.com)
  - Forte Consulting and Investigations – [www.forteinvestigations.com](http://www.forteinvestigations.com)
  - Gerson Lehrman Group – [www.glgroup.com](http://www.glgroup.com)
  - ORC International – [www.orcexperts.com](http://www.orcexperts.com)
  - ThomsonReuters – [www.trexpertwitness.com](http://www.trexpertwitness.com)

# Specific Suggestions - 3

- Join and attend technical and related business meetings
  - AIChE – local and national
  - ACS – local, regional, national
  - Societe de Chemie Industrielle
  - Chemical Marketing & Economics
  - Others in areas of specialization
- Consider joining or attending meetings in areas of specialization
  - Catalysis Society
  - BIO

# Important Early Client – the U.S. Dept. of Energy

- Sought to encourage high risk R&D with potential for major energy savings
- Used teams of experts as reviewers for proposals
- Through former employee added to list of reviewers
- First for chemical proposals, later for Forest Products, Fuels, Hydrogen, Separations, etc.

# My Expanding Roles for DOE

- New technology must have economic incentive for implementation and penetration
- PIs had no understanding of economic evaluation
- Led to major project with data base of existing process and allowing PI to insert info for proposed new technology
- Capital cost estimation database included

# Other DOE Projects

- Bandwidth Project – Exergy Analysis of Most Major Chemical Production Processes Utilized in the U.S.
- Identified those processes and process steps that are most energy-intensive
- Proposed future areas of research that DOE should support

# Broadening my Areas of Expertise

- The multi-year DOE projects gave me an in-depth knowledge of many important processes
- Several assignments from a consulting firm allowed me to review the latest developments in the global petrochemical field
- My industrial career gave me expertise in heterogeneous catalyst R&D, production and marketing, process development and in process licensing, marketing and general management

# Major Consulting Projects enabled by my Background - 1

- Investigating the cause of a poorly operating pair of catalytic reactors for a major international methanol producer; for a group of insurance underwriters
- Project of about one year involved visiting plant, analyzing documents including operating data, testing data on catalyst samples including from catalyst supplier, catalyst loading information, etc., and eventually coming to conclusion on causes

# Major Consulting Projects enabled by my Background - 2

- Advising an engineering company client on the expansion and improvement of an acetic acid plant
- Project involved reviewing patents and public domain literature on competitive process technologies, visiting overseas clients with engineering company personnel, on two occasions, to discuss basis for process changes proposed.

# Major Consulting Projects enabled by my Background - 3

- For a law firm, assembled a team made up of a mathematical modeler and a polymer chemist and myself as project manager.
- Task was to develop a math model based on experimental and literature information to determine whether excessive exposure to heat could have caused a runaway polymerization of a reactive monomer, leading to a fire and explosion of a isocontainer.

# Major Consulting Projects enabled by my Background - 4

- Consulting Firm which publishes multi-client Studies asked my assistance to:
  - Write a report reviewing new developments in certain chemical process areas
  - Perform a Peer Review reports written by other authors

# Major Consulting Projects enabled by my Background - 5

- Litigation Consulting Firms – involved in disputes between chemical companies or government entities or one firm and a government entity.
- Several firms have asked my assistance to:
  - Review documents furnished by lawyers
  - Develop the technical, marketing and business back up for expert or fact witnesses
  - Contribute technical and business content to expert reports

# Major Consulting Projects enabled by my Background - 6

- Client had performed years of R&D work on process technology not available for license
- Client asked me to:
  - Review work, including by meeting with technical staff
  - Recommend whether continuous pilot plant would be necessary before making commercial investment

# Major Consulting Projects enabled by my Background - 7

- Industrial Client was developing new process technology involving catalytic vapor-phase oxidation of hydrocarbon feed stock
- Client asked me to:
  - Make presentation on methodology of flammability testing, including how to interpret results
  - Review their results
  - Advise whether further testing was needed.

# Major Consulting Projects enabled by my Background - 8

- Major firm involved in ethanol is considering biobutanol as a new product
- As part of a three-person team, I developed economic models for proposed biomass route and for the conventional petrochemical-based routes; supply and demand and prices/cost of production history and price forecasts for feedstocks and products of interest.

# Major Consulting Projects enabled by my Background - 9

- Client had an innovative concept for catalytic reactor design and had identified an area of particular interest
- Client asked me to:
  - Review their concept and suggest program for piloting that particular application
  - Estimate current cost of production of target application
  - Assess and rank potential commercialization partners

# Major Consulting Projects enabled by my Background - 10

- Client interested in new process for commodity chemical being developed by a second party
- Client asked me to:
  - Sign confidentiality agreement with second party
  - Review performance projections and process economics presented by that party
  - Review pilot plant data and confirm projected performance and economics

# Major Consulting Projects enabled by my Background - 11

- Served as expert witness
- Case involved my knowledge of licensing, contracts, plant designs, expansions, guarantees, etc.
- I reviewed documents, prepared written report, reviewed and wrote rebuttal of opposing witnesses' reports, made deposition and testified before a judge in the Southern District of New York

# Major Consulting Projects enabled by my Background - 12

- Professor had new catalyst formulation concept
- My client was Venture Firm who asked me to:
  - review business plan and technical plans
  - evaluated likelihood of success and projected cost of development and profitability if successful

# Major Consulting Projects enabled by my Background - 13

- Professor had novel catalytic material
- unexpectedly good small-scale lab results for a major petrochemical application
- My client was Venture Firm who asked me to:
  - Review business plan
  - Review status of lab program
  - Recommend scale up plan
  - Assess likelihood of commercialization success

# Major Consulting Projects enabled by my Background - 14

- Client has discovered a novel way to produce a certain family of catalyst precursors
- Client asked me to:
  - Identify types of catalysts that might benefit from new technology
  - Assess and recommend prioritized research targets

# Major Consulting Projects enabled by my Background - 15

- Microchannel reactor fabricator sought my advice on:
  - A joint-development project with a major international chemical producer on use of such reactors for an important chemical
  - A development of production technology for small-scale Fischer-Tropsch plants utilizing their reactors

# Major Consulting Projects enabled by my Background - 16

- As a catalyst expert, I worked with two other experts (one engineering, one polymerization) for a group of underwriters, investigating the cause of polymer fouling of four tubular catalytic reactors
- Multiple visits to plant site, for meetings with underwriters, plant personnel, catalyst and technology provider to analyse problem and find primary cause(s).
- Review of documents, operating data, results of analytical information, photos of catalyst loading and unloading activities, etc.

# Major Consulting Projects enabled by my Background - 17

- Financial Consulting Firm client wished to donate process technology to university
- My role was to:
  - Evaluate likelihood of successful completion of proposed R&D program
  - Evaluate likelihood of successful commercialization
  - Evaluate potential market for new technology

# Major Consulting Projects enabled by my Background - 18

- Consulting Firm client had new process technology
- My role was to:
  - Critique Draft Joint Development Agreement
  - Evaluate Proposed Licensing Terms and Conditions
  - Evaluate potential market for new technology

What is my Key Message?

No matter how narrow your experience and expertise may be, it is possible to build on what you have and broaden your range of possible areas of consulting