



## **Moving Your Career To The Next Frontier**

**“From or to Microwaves”**

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# **Needed Skills**

## **Fundamental Requirements**

- Good Mental Health and Proper Education
- Verbal – Teaching or Training
- Written – Writing Presentations & Articles
- Interpersonal Communications – Be prepared to speak with people on all levels
- Ask Questions – Be inquisitive & curious
- Be perceptive and focused – Stay with the topic

# **Know All Aspects Of The Business**

- Engineering
- Accounting
- Marketing
- Information Processing
- Operations
- Human Relations/Resources

# What You Need To Know

- The design of modern communications equipment needs microwave circuits.
- To understand the systems you need to know practically everything from DC to light.
- Always keep your knowledge at the leading edge (continuing education).
- Challenge yourself every day and set (reachable) goals.
- Understand the difference between strategy and tactic always keep the long term goal in sight while working short and mid term objectives.

# Diversify Yourself

- Be ready to excel and become a manager.
- Engage in societies such as the IEEE.
- Participate in academics (adjunct professor).
- Be competitive, try as a consultant or employee, to get monies for important (pet?) projects from government agencies or related companies nationally and/or internationally.

# **Microwave and RF Electronic Tactical Communications A New Frontier**

What I like:

- The challenges of the James Bond type gadgets over a wide frequency range.
- Building radio communications components and systems on all levels.

What I dislike:

- Today's society's simultaneous requirements for much experience/young age and high education is simply not possible.

# **From an Engineer to a Manager**

## **Synergy Microwave Corporation**

Today, Synergy's product line of microwave oscillators, and mixers are among the worlds best.

A good way to test your knowledge and competitiveness of your products and applications is to publish your thoughts and open them to evaluation from others.

I believe we are successful in business and "best in class" because we brought together all the necessary disciplines needed.

# **Creativity In Microwave Research And Development**

## **Am I Creative?**

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*[\*\[cottbus.de/mitarbeiter/ro/rohde.html\]\(http://www.kt.tu-cottbus.de/mitarbeiter/ro/rohde.html\)\*](http://www.kt.tu-</a></i></p></div><div data-bbox=)*



# Where Does Creativity Come From

- Creativity is typically triggered from a need to solve a problem.
- Unfortunately, many inventions and creative results are triggered from possible or perceived confrontations (Defense/War).
- Examples are: lack of power from either power plants, defense weapons or other aspects like high performance communication equipments (cell phones, tactical radios).
- Also competition and the market needs generate a kind of a “small” war.

# Creativity Requires A Vision

- The vision needs to address a solution of something that is clearly defined, needed and not yet achieved.
- A vision also requires looking beyond the boundaries (sometimes beyond your knowledge).
- This sets free creativity, the desire to find “a better mouse trap”.

# Creativity Is Hard Work

- Creativity requires you take inventory of (all) existing solutions, analyze mistakes of the past and work towards a new and better solution. If necessary, start with a clean sheet.
- This combined effort is really “research” and research can also be frustrating as many solutions are difficult to achieve.
- In order to be creative, you need to know the technology in which you operate.
- One man alone being creative is not enough.
- Success requires a diversified and competent team and a clearly defined goal.

# Methods And Examples

- A good example is the migration of high performance technology of planar printed circuits to monolithic circuits.
- Why is it so difficult and creative?
- The design rules that drive planar multi-structure arrangements cannot easily be duplicated in the highly lossy Si or GaAs.
- This requires a variety of knowledge that only a team with different but competent and proven expertise can handle.

# Forming The Team Requires Mental Stability

- You need type “A” individuals with controlled ego, that can survive stress and have the ability to accept a team leader.
- Most modern successful companies are based on such a structure.
- The ideal structure of such a team consists of:
  1. Academia both in physics and microwave,
  2. People with production background and marketing background.
  3. Last but not least, people who understand finance.

# Ingredients

- Looking at the presentations at the MTT or at its proceedings and at the groups of people given the Nobel prize, we find that today it takes mostly an innovative team rather than an individual to be successful in our demanding Engineering field. Sadly enough sometimes only the “leader” gets the recognition.
- The winning recipe from looking at the fundamentals of economics is:
  1. Find a market niche.
  2. Have a creative product that fits.
  3. Bring it to the market timely and affordably.
  4. Be well financed for a start-up.
  5. Try to become first or second in this market.