Engineering Experience Workshop

Wings Over the Rockies Air & Space Museum

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Who is in the audience?

- Students
  - Middle School
  - High School
- Entrepreneurs
- Leaders
- Friends and Family

What do you aspire to be?

- Engineer
- Entrepreneur
- Doctor
- Lawyer
- Anything else?

My Background / Childhood

- 1st Generation Russian
  - Parents from Belarus and Russia
    - Dad had a hard upbringing
    - Mom survived communism by moving to Northern Iran
- Born in Washington Heights, Manhattan
  - I had to tell my parents what it was like to be a kid growing up in America
- English as a Foreign Language
  - Russian spoken at home
- Languages – Russian, Armenian, French, and Spanish

My Education

- Attended Grade School in Manhattan
- Weekend Russian Language School
- Bronx High School of Science
- Tufts University
  - Bachelor of Science – Electrical Engineering
    - Minor in Computer Engineering
    - Minor in Engineering Management
  - Masters of Science – Electical Engineering

My Travels

- Flown over 7 million airmiles
  - Equivalent to over 14 round trips to Moon
- Take care of my 90 year old mother in NYC
- Live with wife and family in Golden CO
- Lived in multiple countries
- Public speaker around the Globe
- Love customs and local traditions

My Entrepreneurship Experience

- Record Factory – High School
- Chinese Food Delivery Service – College
- Teacher’s Assistant - College
- Party DJ – College

Entrepreneurship Traits

- Entrepreneur
  - A person who has an idea and pursues a business around that idea
- Creator of Business
- Risk Taker
- Opportunity Recognizer
- Leader
- Innovator
- Competitive
- Highly Motivated

Benefits of Entrepreneurship

- Freedom to work
  - Whenever
  - Wherever
- Excitement
  - Each day is full of new challenges
- Control
  - Choice of doing what you like to do
- Make the most of your strength and skills

My Engineering Experience

- Digital Equipment Corporation – Boston, MA
  - Hardware Engineer
    - Designed a large computer
  - Software Engineer
    - Moved into software simulation
- Ready Systems – Silicon Valley, CA
  - Applications Engineering
    - Real Time operating systems
  - Moved into sales

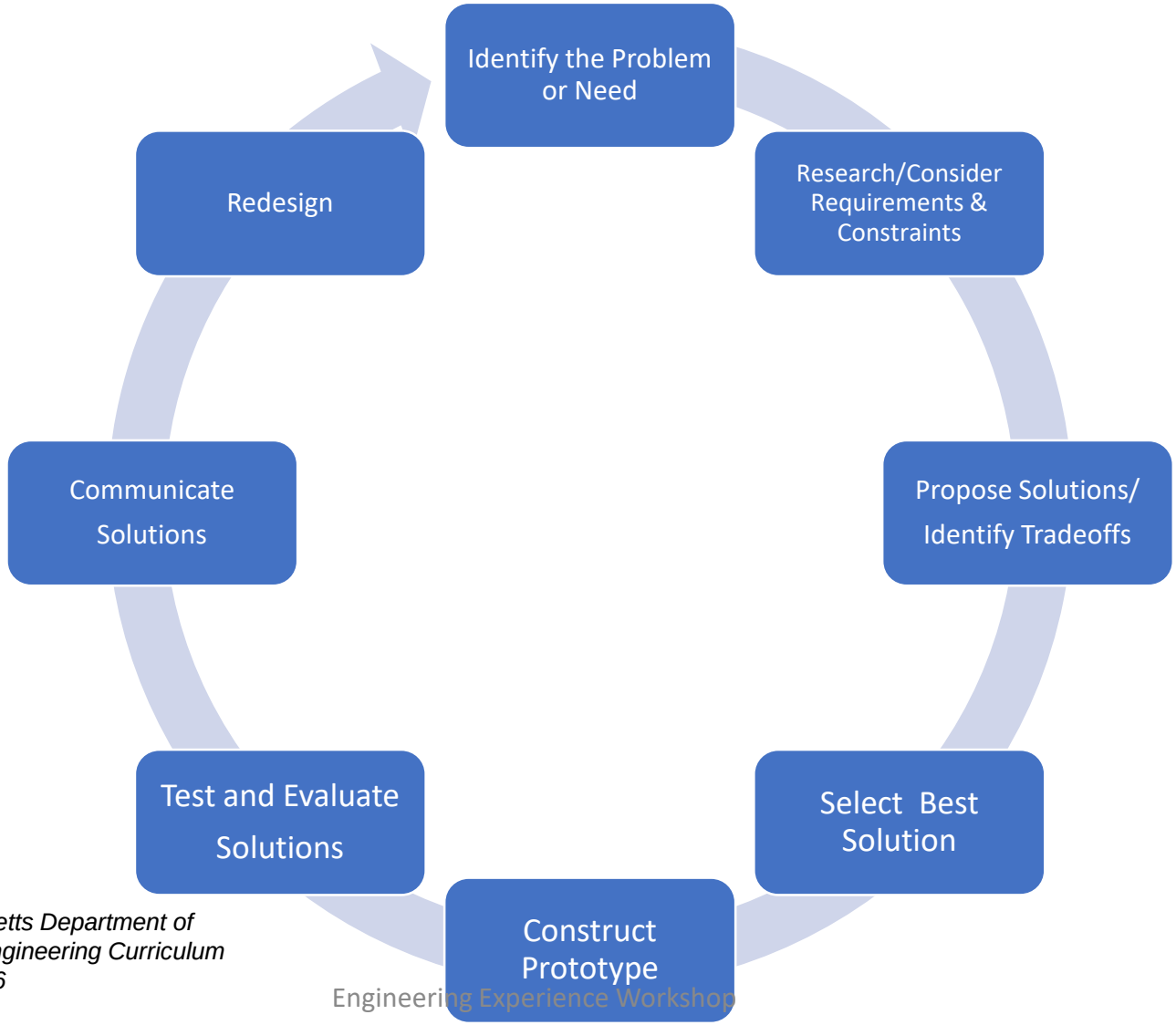
What do Engineers Do?

- Engineering involves developing innovative solutions to benefit humanity
- Engineering is essential to our health happiness and safety
- Engineers devise creative solutions to problems
- They design products and technologies to improve our quality of life
- Engineers shape our future

What do Engineers Design?

- Technology
  - Computers and electonics
- Structures
  - Buildings and bridges
- Equipment
  - Medical Equipment
- Chemicals
- Pharmaceuticals, household products, cosmetics
- Materials
  - Polymers, plastics, sports equipment
- Transportation –
  - Automobiles, aircraft
- And much more!

Engineering Design Process



Adapted from *Massachusetts Department of Education, Technology/Engineering Curriculum Frameworks - Spring 2006*

Higher Order Thinking Skills

- **Analyzing**
  - identifying design problems
  - organizing ideas
  - developing data representations
- **Evaluating**
  - choosing materials, debating with teammates
  - deciding on a course of action
  - testing designs
  - assessing failures
- **Creating**
  - generating new ideas, designing solutions, hypothesizing what will happen, constructing models, redesigning models

Engineering is inter-disciplinary

- Science
  - Materials
  - Machines
- Math
  - Calculations
  - Measurement
  - Algebra
- Technology
  - Design and Problem Solving
- Language Arts
  - Communications are important
    - Speaking
    - Writing
    - Researching
- Social Studies/History
  - Impact on society

My Sales Experience

- Selling started to get something from my parents
- Ready Systems
- Pure Software
  - Working for Reed Hastings
- Telogy Networks - EMEA
  - Moved to Europe
- Texas Instruments – Boston, MA
- Edge of Space
  - Cool stuff to space

Sales

- Definition of 'Sale‘
  - A transaction between two parties where the buyer receives goods (tangible or intangible), services and/or assets in exchange for money
- A great sales experience is
  - Enjoyable
  - Very memorable
  - Referenceable
- A bad sales experience is unforgettable
- Sales is getting to “YES”
- It is about understanding and enabling buying

Sales Tips

- Smile
  - Smiling is a simple way to make a good first impression
- Actively Listening
  - Customers want to hear what you have to say, but they want you to hear what they have to say first

Seven Traits of Successful Salespeople

- Ambition
- Courage
- Commitment
- Professionalism
- Preparedness
- Continual learner
- Responsible

My Leadership Experience

- Turkey – Bicom
  - Phone systems
- India – Ittiam Software
  - User experiences
  - Voice and Video over Internet
- China – DigiLink Software
  - Outside design house
- Space – Center for Advancement of Science in Space
  - Looked at investment opportunities in Space
- GEN Space

A Leader is a:

- Person that holds a dominant or superior position within a field, and is able to exercise a high degree of control or influence over others
- Person who leads or commands a group, organization, or country

What does it take to be a leader?

- Honesty and Trust
- Delegation
- Communication
- Confidence
- Commitment
- Positive Attitude
- Creativity
- Intuition
- Inspiration

My Current Responsibilities

- Space Nation
  - Head of Sales
- Global Entrepreneurship Network, Space
  - Executive Director
- Transform Poverty
  - Board Member
- University of Denver, Daniels College
  - Professor of Sales and Entrepreneurship

My Personal Realization

- Earn and share respect
- Dream big and then plan towards them
- Leverage trust between friends and networks
- Never eat alone
- Find good mentors
- Life is Short

My Mentoring Experience

- Africa
  - Zimbabwe
  - Botswana
  - South Africa
- Russia (or former USSR)
  - Armenia
  - Georgia
  - Latvia
  - Moldova
  - Estonia
- Finland
- United States
  - Boulder / Denver
  - Florida
  - NYC
  - Space – NASA HUNCH, CASIS NDC (Bell Middle School)

Mentors are:

- Active Listeners
- Dedicated to Their Success
- Dedicated to Success of Others
- Curious
- Engaged with their surroundings
- Willing to step out of their comfort zones.
- The 3 R’s
  - Responsible, Respectful, and Ready

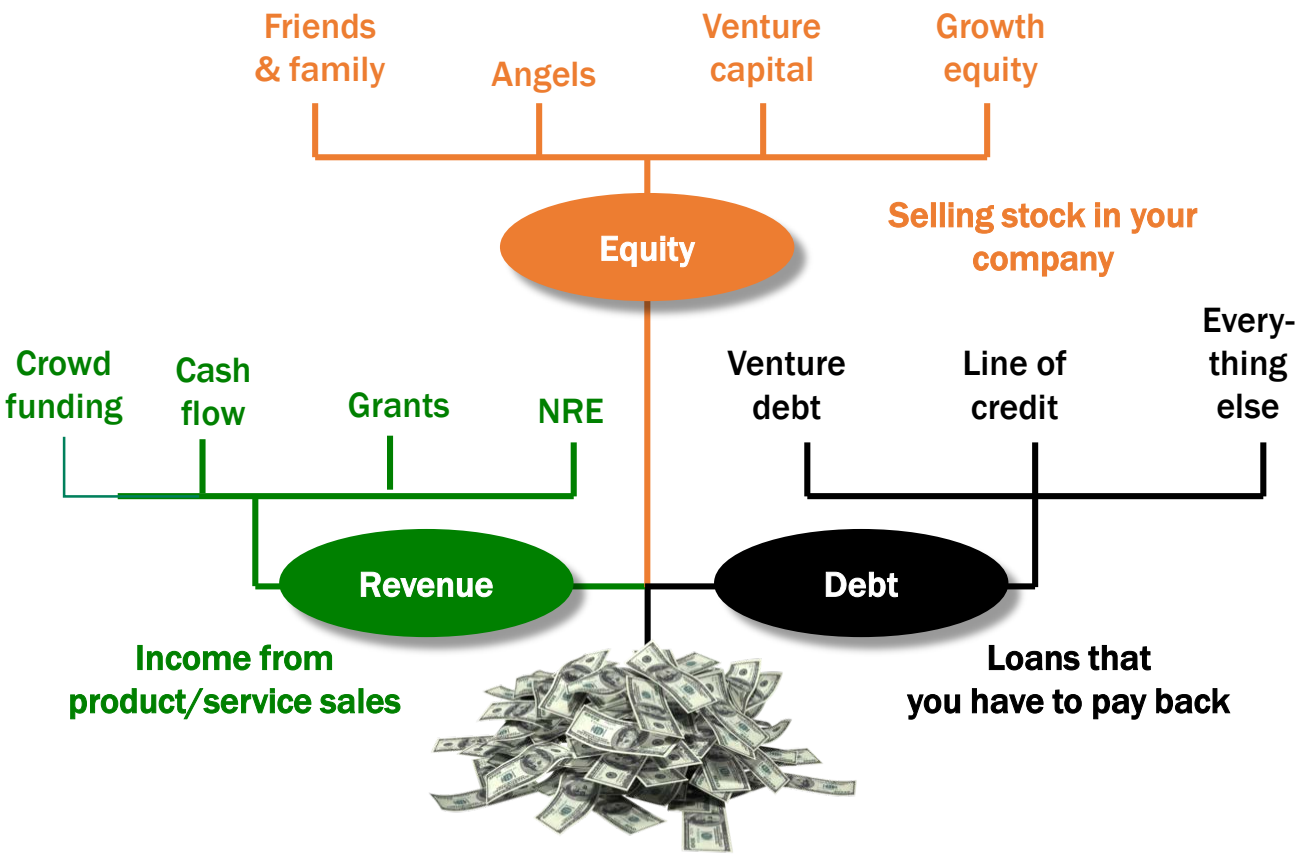
My Investing Experience

- Stock Market
- Investing in Companies that I worked in
- Started Angelus Funding - 2012
  - Over 45 trusted investors globally
  - Over 20 investments personally since 2013

My investments include

- New York City Real Estate
- Advanced Materials
- Disruptive Vaccine Delivery Technology
- Technology to eliminate Distracted Driving
- Connected Companion Toys
- Innovative Airline Passenger Seating
- Personal Tech Liquid Damage Repair
- Space Tourism
- Space Laboratories
- Space Nation

How Investing Works



My Public Speaking Experience

- Slush - Tokyo
- Slush - Finland
- IndieGame – Denver
- SpaceCom – Houston
- Arct15 – Finland
- CES – China
- Impact Hub – Armenia
- GEC – South Africa
- GEC – Turkey

Presentation Tips

- Fit your style to your audience
- Poise and confidence
- Love your product
- Be easy to understand
- Smile
- Establish eye contact with everyone
- Vary your voice
- Use people’s names
- Involve the audience
- Be yourself and have fun

What’s next for you?

Career Preparation and Steps

- Figure out what you enjoy and why
- Determine which path you want to take
- Show your authentic story
- Your personal brand
  - Resume
  - Interview and present yourself well
- Grow and learn

Interview Questions - How Many

- How many gas stations are there in the U.S.?
- How many cows are in Canada?
- How many barbers are there in Chicago?
- How many ping pong balls could fit in a Boeing 747?
- How many gallons of paint does it take to paint the outside of the White House?
- How many trees are there in NYC's Central Park?

Interview - Quick Math Questions

- What is the sum of the numbers one to 100?
- What is the angle between the hour-hand and minute-hand of a clock at [time]?
- If I roll two dice, what is the probability the sum of the amounts is nine?

Interview – Why questions

- Why is a tennis ball fuzzy?
- Describe the benefits of wearing a seatbelt.
- Why are manhole covers round?

Interview – Explanation questions

- Explain the internet to someone coming out of a 30-year coma
- Describe the color yellow to a blind person
- Teach me how to make an omelet

Light Switch Question

- You’re in a room with three light switches, each of which controls one of three light bulbs in the next room
- Your task is to determine which switch controls which bulb
- All lights are initially off, and you can't see into one room from the other
- You may inspect the room only once
- How can you determine which switch is connected to which light bulb?

Light Switch Answer

- Call the switches 1, 2 and 3
- Leave Switch 1 off
- Turn Switch 2 on for five minutes and then turn it off
- Turn Switch 3 on and leave it on
- Enter the room
  - The bulb that is on is controlled by Switch 3 (the one you left on)
- Feel the light bulbs that are off for heat
  - The bulb that is off and warm is controlled by Switch 2 (the one you turned on, then off)
  - The bulb that is off and cold is controlled by Switch 1 (the one that you didn't turn on)

3 and 5 Gallon Jugs Question

- You have a 3 gallon jug and 5 gallon jug, how do you measure out exactly 4 gallons?

3 and 5 Gallon Jugs Answer

- We know we can't get the final result in the 3 gallon jug. It'll overflow. We need to end up with 4 gallons in the 5 gallon jug.
- First fill the 3 gallon jug
- Then pour the 3 gallons into the 5 gallon jug
- Now the 3 gallon jug is empty, and the 5 gallon jug has 3 gallons in it
- Fill the 3 gallon jug again. Slowly pour into the 5 gallon jug. Only 2 gallons will fit because it already has 3. Now it's full
- Exactly 1 gallon is left in the 3 gallon jug
- Dump out the 5 gallon jug
- Pour your 1 gallon into the 5 gallon jug
- Fill up the 3 gallon jug one more time and pour it into the 5 gallon jug! You have exactly 4 gallons

Brain Teasers - Links

- 10 Visual Brain Teasers
- Brain Stretching Teasers

Thank you

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Backup Engineering Slides

Engineering Disciplines

- **Aerospace Engineering**
  - Design, develop, and test aircraft, spacecraft, and missiles and supervise the manufacture of these products
- **Architectural Engineering**
  - Apply engineering principles to the construction, planning, and design of buildings and other structures
- **Bioengineering**
  - Of service to people, work with living systems, and apply advanced technology to the complex problems of medical care

Engineering Disciplines - Continued

- **Chemical Engineering**
  - Work in manufacturing, pharmaceuticals, healthcare, design and construction, pulp and paper, petrochemicals, food processing, specialty chemicals, polymers, biotechnology, and environmental health and safety industries
- **Civil Engineering**
  - Involved in the conception, planning, design, construction, and operation of facilities essential to modern life, ranging from transit systems to offshore structures to space satellites
- **Computer Engineering**
  - Analyze and evaluate computer systems, both hardware and software. They might work on system such as a flexible manufacturing system or a "smart" device or instrument

Engineering Disciplines - Continued

- **Computer Science**
  - Design technologies such as the next generation computer systems, computer networking, biomedical information systems, gaming systems, search engines, web browsers, and computerized package distribution systems
- **Electrical Engineering**
  - Conduct research, and design, develop, test, and oversee the development of electronic systems and the manufacture of electrical and electronic equipment and devices
- **Environmental Engineering**
  - Use the principles of biology and chemistry, environmental engineers develop solutions to environmental problems

Engineering Disciplines - Continued

- **Industrial Engineering**
  - Determine the most effective ways to use the basic factors of production — people, machines, materials, information, and energy — to make a product or to provide a service
- **Manufacturing Engineering**
  - Involved with the process of manufacturing from planning to packaging of the finished product
- **Materials Engineering**
  - Encompasses the spectrum of materials types and how to use them in manufacturing. Materials span the range: metals, ceramics, polymers (plastics), semiconductors, and combinations of materials called composites

Engineering Disciplines - Continued

- **Mechanical Engineering**
  - Use the principles of energy, materials, and mechanics to design and manufacture machines and devices of all types
- **Nuclear Engineering**
  - Research and develop the processes, instruments, and systems for national laboratories, private industry, and universities that derive benefits from nuclear energy and radiation for society
- **Software Engineering**
  - Working in applications or systems development analyze users' needs and design, construct, test, and maintain computer applications software or systems

Backup Video - Why

- Why Ask Why – Simon Sinek

Backup Video - Pursuasion

- Science of Pursuasion