Senate Commerce Committee

Profile of the Future Employee

Hugh Khan

Vice President of Engineering

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Personal

- University of Kansas
- Perceptive Software

- ## Aerospace Engineering
  - ### Graduated with Mechanical Engineering and Computer Science

- ## Perceptive Software
  - ### Summer Internship in 1990
  - ### Big Pivot

- ## Long Ramp
  - ### Successful International Business
  - ### Acquisition by Lexmark in 2010

Agenda

Corporate:

Strategy   Process

Culture   People (Most Important)

Structure

Complicated vs Complex

Definition

- "the study of the phenomena which emerge from a collection of interacting objects" -- Neil Johnson

- "something with many parts where those parts interact with each other in multiple ways"

Complicated	Complex
Getting your baggage from London to Sydney	Giving you a good experience from London to Sydney (customer experience)
Designing and constructing a village/township	Designing and creating a community
Brain surgery	Health
Putting a man on the moon	Bringing up a child

Irene Ng, University of Warwick

Examples: Characteristics

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Complicated	Complex
Formulae are critical and necessary	Formulae have limited application
High levels of expertise in a variety of fields are necessary for success	Expertise can contribute but is neither necessary nor sufficient to assure success
Rockets are similar in critical ways	Every child is unique and must be understood as an individual – relationships are important
There is a high degree of certainty of outcome	Uncertainty of outcome remains
Orchestration	No one in charge
Predetermined Goals	Emergent Behavior

Dr. Will Allen

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Complicated	Complex
Accounting	Sales
Civil Engineering	Account Manager
Finance	Marketing
Rocket Scientist	Enterprise Software Developer

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Complicated	Complex
iPhone	iTunes
Car	Facebook
Power Plant	Power Grid

- # Dematerialization

  - Average weight per dollar of US Exports has been dropping dramatically since the 80's

  - "We are steadily substituting intangible design, flexibility, innovation, and smartness for rigid, heavy atoms. In a very real sense our entry into a service - and idea-based economy is a continuation of a trend…" -- Kelly, Kevin (2010-10-14). What Technology Wants

- We have to change how we work in the new economy

- How do we define strategy in order to compete in producing highly complex products?

- # Every employee needs to know and believe in the core purpose of the corporation's existence
    - Obviously it goes beyond just making money
    - What is it that the corporation actually provides the economic system?
    - What problem space does it want to focus on?
    - Examples:
        - Wal-Mart: *To give ordinary folk the chance to buy the same things as rich people*
        - Cargill: *To improve the standard of living around the world*
        - McKinsey: *To help leading corporations and governments be more successful*

- It is the result of choices a company makes, on how to win, to maximize long-term value.

- It is the process to achieve sustainable competitive advantage

- It is not just a goal or simply a description of your current business

- # Richard Rumelt's "kernel of a strategy":
  - A diagnosis that defines or explains the nature of the challenge
  - A guiding policy for dealing with the challenge
  - A set of *coherent actions* that are designed to carry out the guiding policy

- ## Lexmark Strategy I
  - Printing hardware demand down
  - Shift to higher position in the value chain: enterprise software - ECM
  - Actions/Tactics
    - Acquire enterprise software companies

- ## Lexmark Strategy II
  - Enterprise Content Mgmt market saturated
  - Shift to higher position in the value chain: Line of Business solutions
  - Actions/Tactics
   - Target industries; Hire expertise; Identify need; Develop solutions

- ## How do you discover the winning formula
    - It emerges by trial and error
    - The whole company has to become a learning organization
    - Need to work as a collective in order to have short discovery and execution cycles
    - Company needs all employees engaged which leads to buy in from everybody

- # Egalitarian Culture

  - Software companies have been leading the way

  - No special perks for upper management

    - No reserved parking

    - No fancy offices or separated executive office suites

  - Low Power Distance Index

- Hofstede's Power Distance Index measures the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally

- High Value = Bad; Low Value = Good

- High – *The Middle East, Russia, India and China*

- Low – *Japan, Australia and Canada*
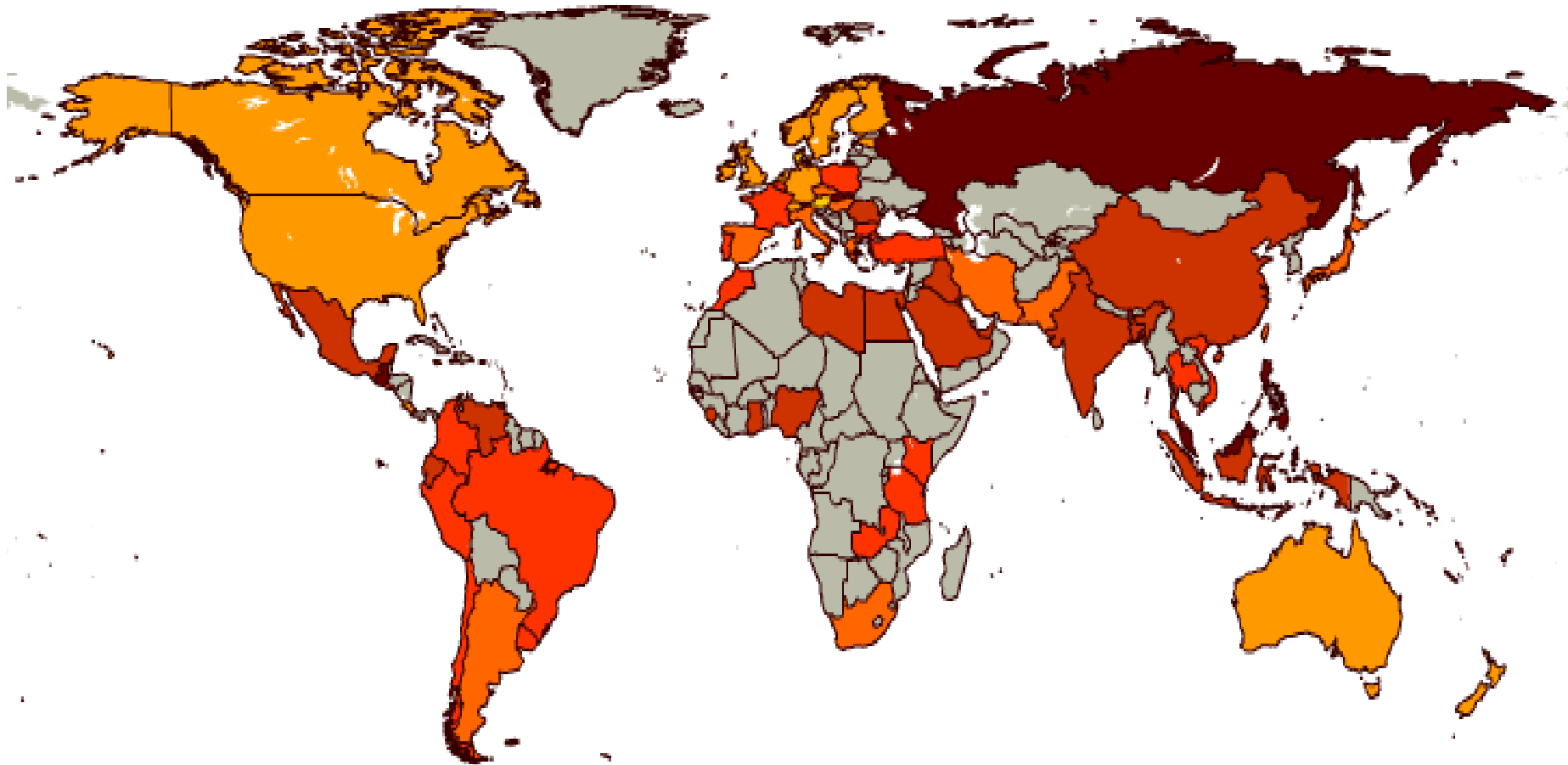
- Those in authority openly demonstrate their rank.

- Subordinates are not given important work and expect clear guidance from above.

- Subordinates are expected to take the blame for things going wrong.

- The relationship between boss and subordinate is rarely close/personal.

- Politics is prone to totalitarianism.
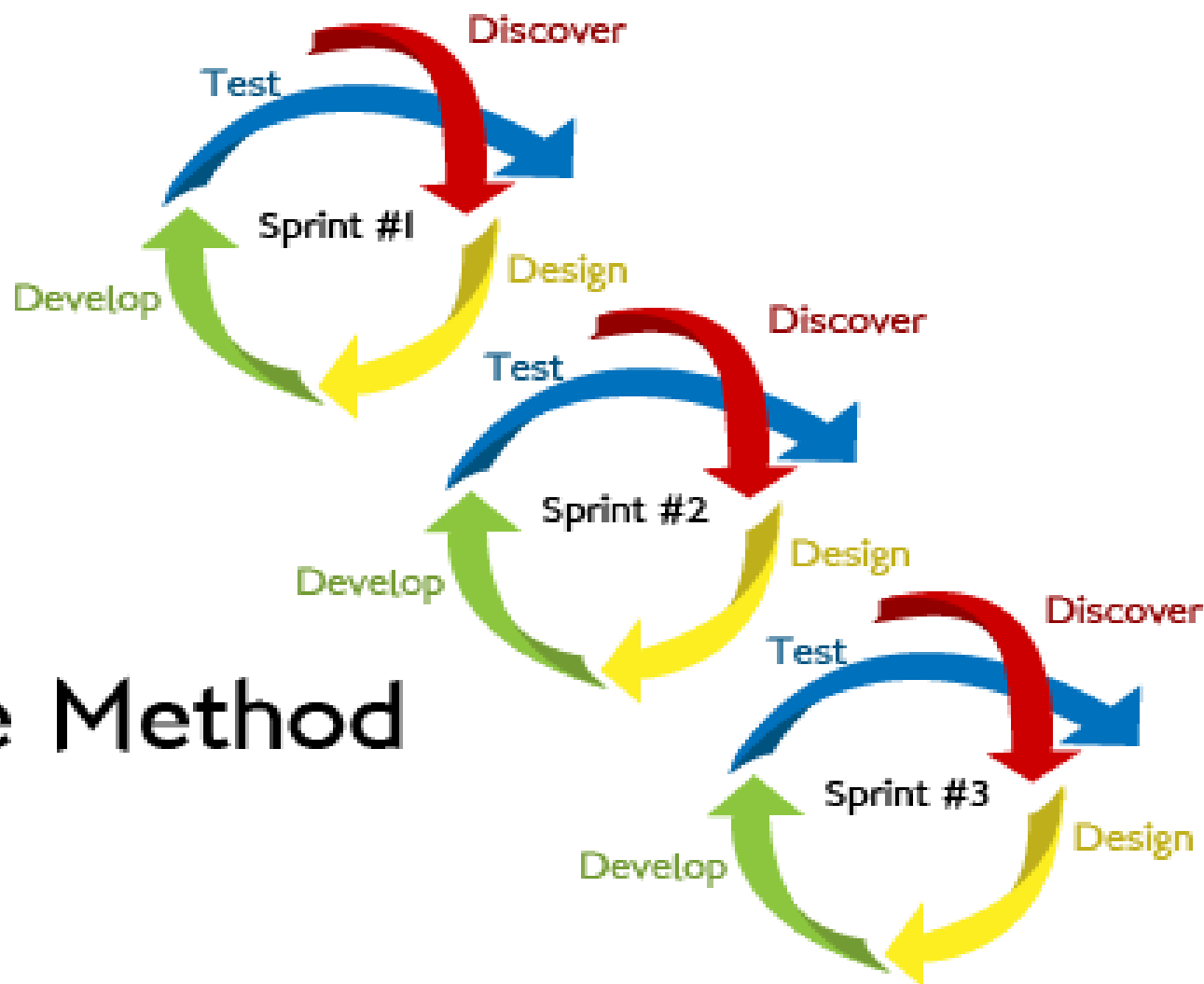
- Class divisions within society are accepted.

- Superiors treat subordinates with respect and do not pull rank.

- Subordinates are entrusted with important assignments.

- Blame is either shared or very often accepted by the superior due to it being their responsibility to manage.

- Managers may often socialize with subordinates.

- Liberal democracies are the norm.

- Societies lean more towards egalitarianism

- G Factor (General Factor) for human intelligence

- C Factor (Collaboration Factor) for team intelligence

  - Just like people, some teams are smarter than others

- Everyone belongs on a team

  - Even upper management

  - Team size of 5-10

  - Can't hide

  - Can switch around members until optimal chemistry is achieved

  - Everyone brings different aspect to the team

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- "One of the great lessons of the twentieth century— the most dramatic controlled experiment in human history— was that centrally controlled economies are grossly inefficient."

- "More people starved to death in Stalin's and Mao Tse-tung's centrally planned regimes than were killed in World War II."

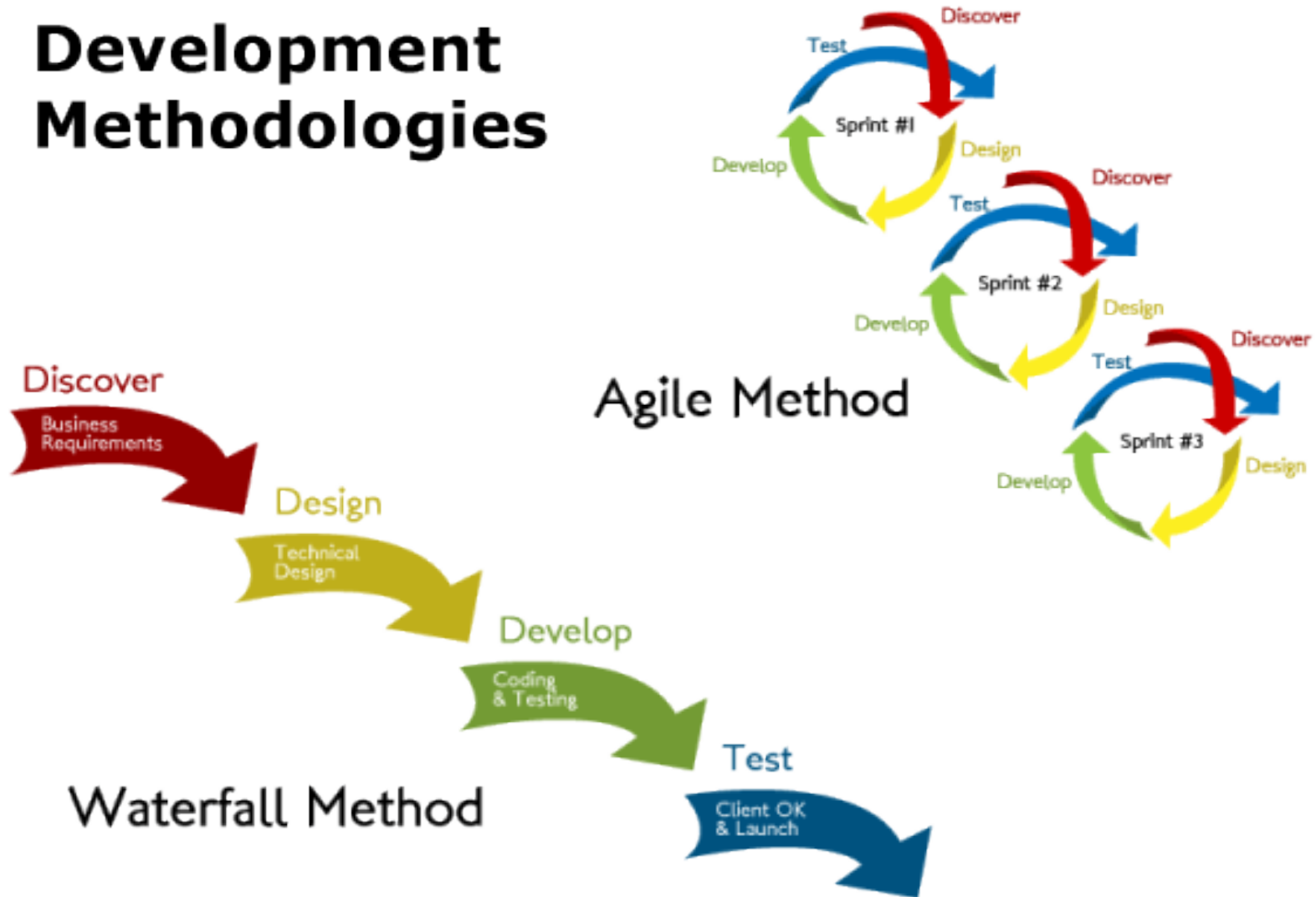- "People continue to starve to death in North Korea today" – Richard Rumelt

- "Decentralization, together with employee empowerment, permits companies to adapt quickly to competitive pressures" -- Kyocera management

- Autonomous incubators
  - How a large corporation should be divided up into an aggregation of high performing sub-units
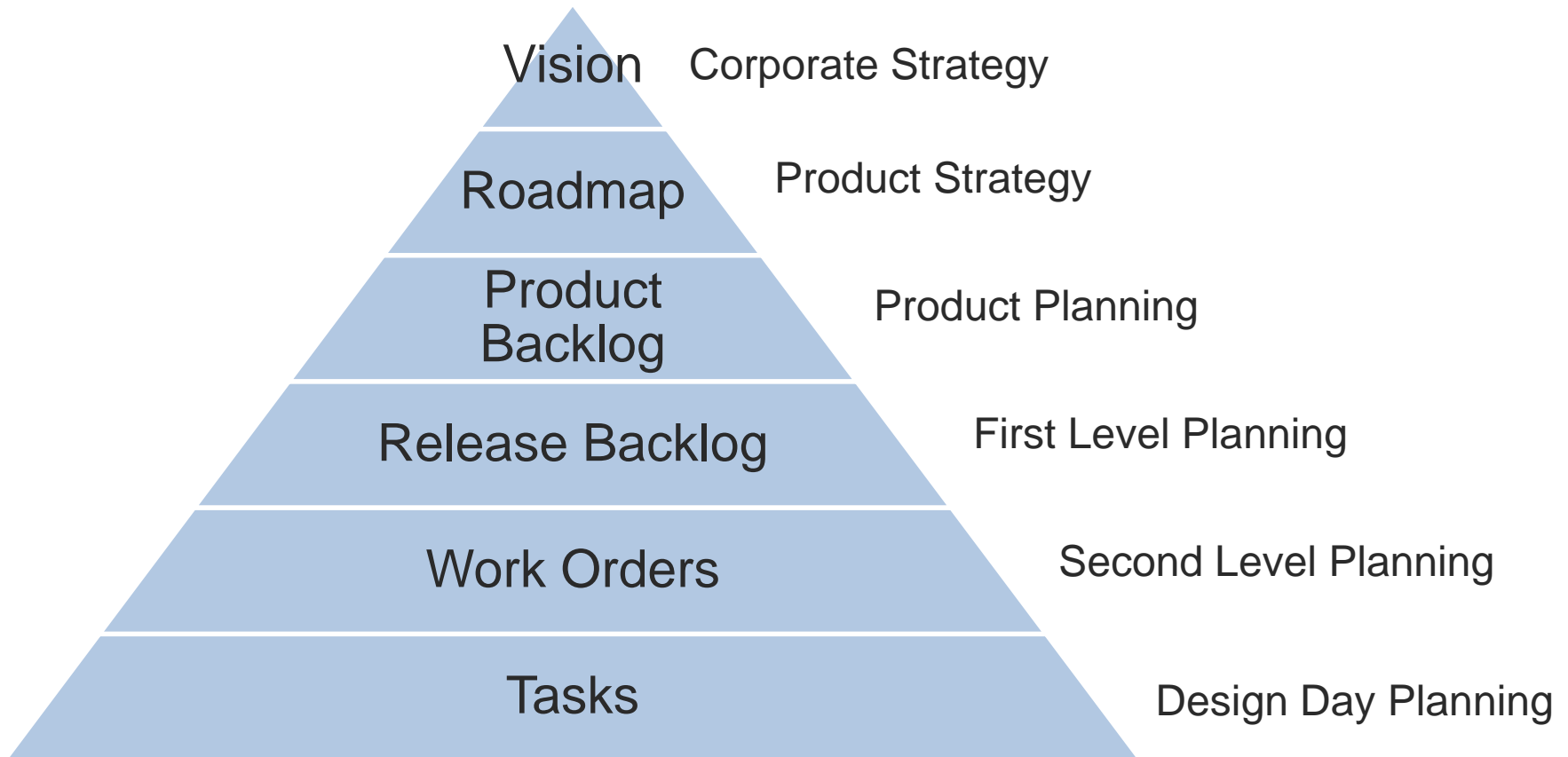 - Enables a large corporation act like a smaller more nimble firm.

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1 Individuals and interactions over processes and tools

2 Working software over comprehensive documentation

3 Customer collaboration over contract negotiation

4 Responding to change over following a plan

Agile Method

Vision   Corporate Strategy

Roadmap   Product Strategy

Product
Backlog   Product Planning

Release Backlog   First Level Planning

Work Orders   Second Level Planning

Tasks   Design Day Planning

- Personality
- Talent
- Work Ethic
- Experience

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- We highly value people who are **Collaborative**, **Talented**, **Dedicated** and exhibit strong **Integrity**

- Open, Bright and Driven

- We want to work with people who share with us good sense of humor, humility, creativity, flexibility, good judgment, calmness, goal orientation, reliability, curiosity, strong desire for mastery, independent thinking, productivity, and persuasiveness

- We have a strong awareness of culture and unity

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- Good Judgment
- Conscientious
- Collaborative
- Communicative
- Positive
- Respectful
- Problems Solver

- Ambitious
- Curious
- Multiple Interests
- Flexible
- Passionate
- Honest
- Selfless

- **Shift away from Silicon Valley**
  - Venture concentrated in San Fran, Boston and NY
  - Internet availability everywhere is a game changer
  - Portability of populations is not natural or desired

- **What can we do in Kansas?**
  - We have already been able to build exceptional companies in eastern part of the state
  - Promote quality of life
    - Reasonable housing, good schools, relaxed pace, proximity to KC
  - Art scene connection in NY and Berlin… and now KC!
    - Crossroads, West Bottoms

- **STEM is one aspect**
  - We need well rounded graduates
    - Diverse second degrees
  - Complexity and creativity best handled by multi-disciplinary team members

- **Get more women in technology**
  - Currently less than 12% enrolled in CS

- **Coursework on**
  - Strategy
  - Leadership
  - Systems thinking