Organizations

SOftEng
http://softeng.polito.it

Organization

- Definitions
  - (simple) group of people intentionally organized to accomplish an overall, common goal or set of goals
  - (Formal, Daft)
    - social entity
    - guided by objectives
    - designed to perform structured and coordinated activities
    - interacting with the environment (open system)

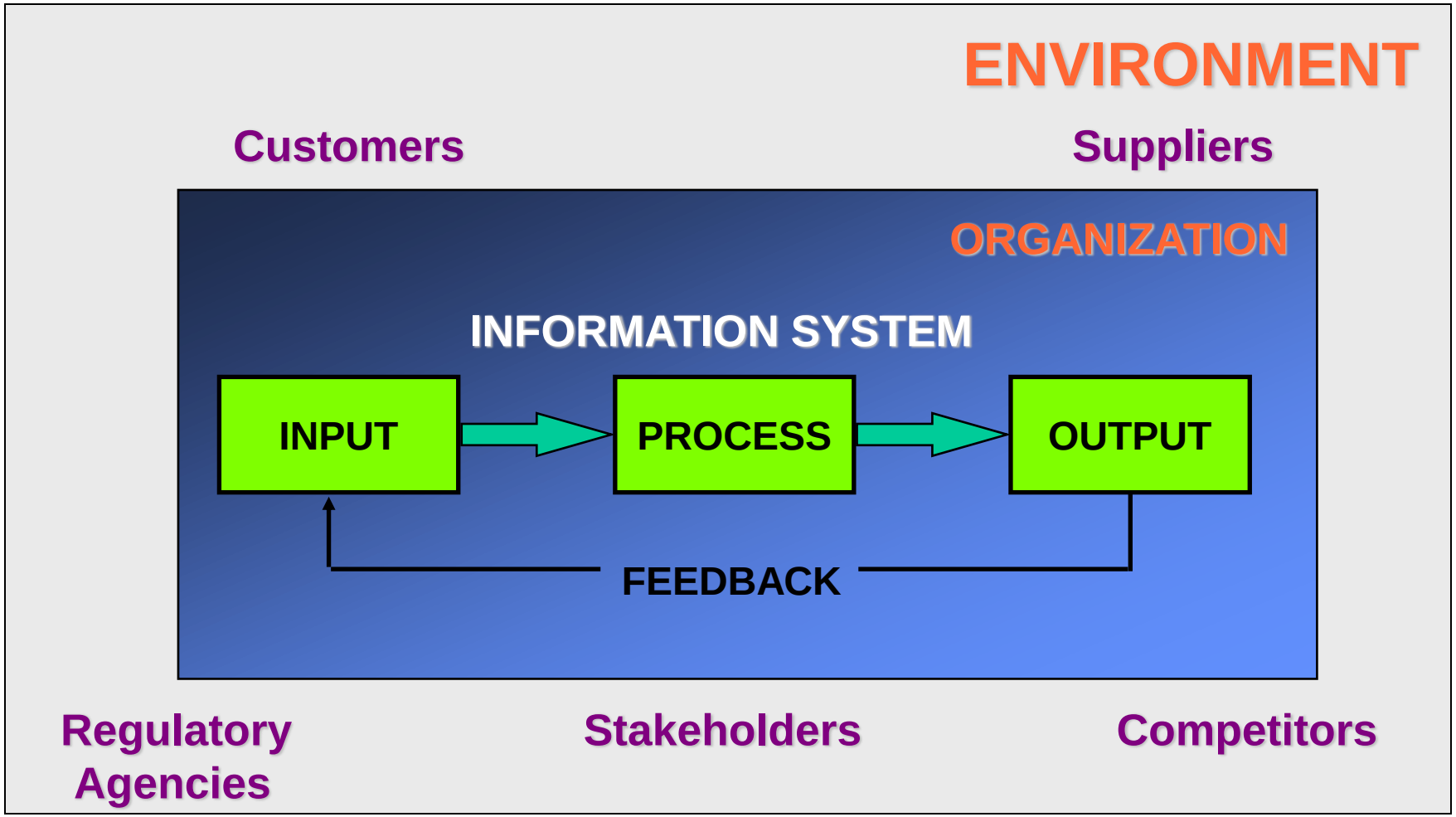
Organization vs. person

- Goal
- Made of parts, concurring (or not) to achieve the goal(s)
- Lifecycle (birth, life, death)
  - Person: 70 years average life
  - Organizations: around 10yrs average life
    - Catholic church, chinese dynasties: 1000 yrs
- Tradition, culture, habits
  - Resistance to change
- Adaptation and evolution

Organizations

- Very few before industrial revolution
  - Army, church, states and bureaucracies
- Many more after
  - Companies, trade unions, ministries
  - Profit, no profit
  - Development of related studies
    - Management science
    - Sociology, economics, psychology, anthropology

An Open System



Characteristics (Org. var.)

- Size
- Goal type, goal and strategy
- Culture
- Politics
- Environment
- Technology / IT Technology
- Structural
  - Dimension (Size in staff, org units, geo sites)
  - Organizational structure

- Formalization/specialization/hierarchy
- Organizational types

Organizational variables

- All characteristics of an organization can be seen as organizational variables (or parts of organization to be defined/changed) in organization design

Organizational design

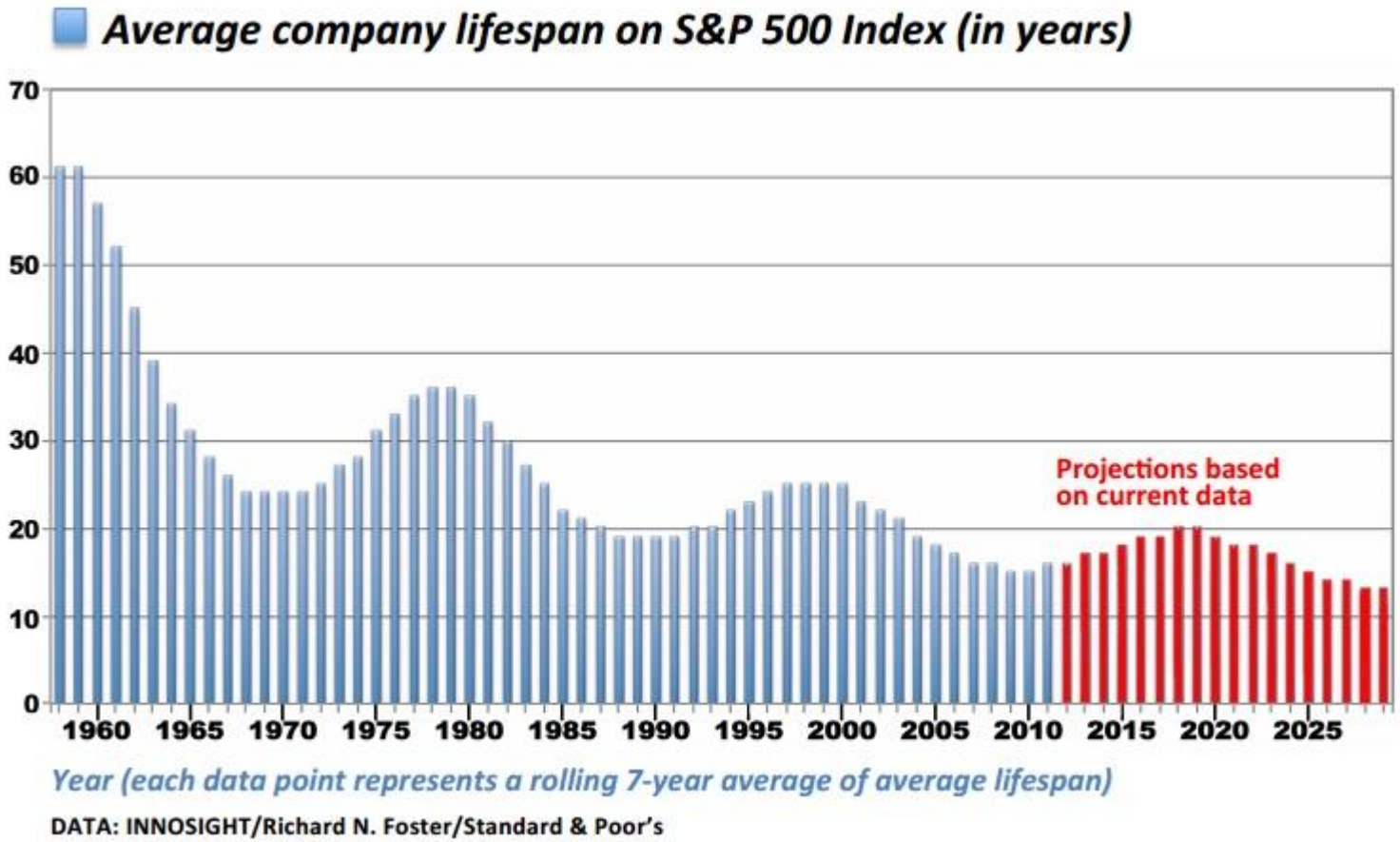
- Define organizational variables of an organization

Change

- In most cases an organization exists, and has a certain design (organizational variables are defined)
- Organizations need to change (== change their organizational variables) to react to changes around and inside them
- Organizations are more or less resistant to change

Change and lifespan

- Average life expectancy of all companies (Japan, Europe)
  - 12.5 years [1996, Stratix Consulting Group]
- Average life expectancy of S&P500 companies
  - 40-50 years
  - 1/3 of S&P500 companies in 1970 disappeared by 1983
  - Of S&P500 companies in 1919, only 10% exist today


Average company lifespan on S&P 500 Index (in years)
70
60
50
40
30
20
10
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
Projections based on current data
Year (each data point represents a rolling 7-year average of average lifespan)
DATA: INNOSIGHT/Richard N. Foster/Standard & Poor's

Standard & Poor 500

- 500 most valuable companies traded on US Stock exchange

- Oldest: General Electric (1926)
- New entrants: Google, Amazon, Netflix
- Out: Kodak, NYTimes, Palm, Compaq, ..
  - Bankrupt or acquired/merged

"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.
In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment."

Leon Meggiston
(on the shoulders of Charles Darwin)

Creative destruction

(Joseph Schumpeter)

process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one

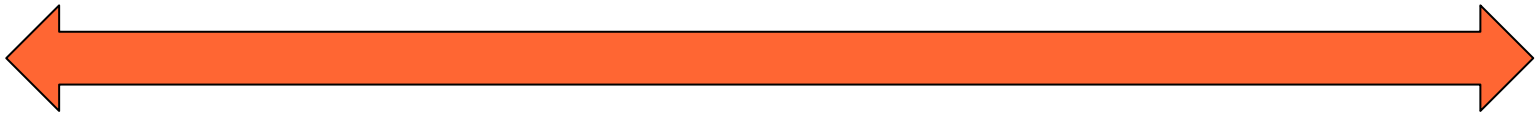
Change and IS

- Information systems (and changes to IS) are one of the key factors (with employees) to be considered in the evolution of an organization

Change, and IS

All processes are human based
- Max flexibility
- Min efficiency

All processes are automated
- Min flexibility
- Max efficiency



- Automation implemented via software applications increases efficiency
- However, fast adaptation depends on the capability of adapating as fast as possible the applications

Change management

- Discipline that studies issues and techniques for supporting changes in organizations

Size

- Number of employees
  - Full time
  - Part time
    - Cfr FTE, Full Time Equivalent
  - Close collaborators
- Turn over
- #sites

Size

- Definitions by European Commission

	staff	Turnover
Large		
Medium	<250	< 50M Euro
Small	<50	< 10M
Micro	<10	< 2M

  - SMEs (Small Medium Enterprise) are the majority of companies (90% +) and employ the majority of employees

Size – FTE

- Full time equivalent
  - Unit of measure: one employee working one working day
  - Important when companies use part time employees
  - Ex 2 employees working 50% part time make 1 FTE

Ex. 2015

	Google	Amazon	Toyota	Ford
Employees	57K	230K	345K	200K
Turn over (US$)	74B	107B	240B	150B
Profit (US$)	16,3B	0,6 B	17,3 B	7B
Profit / turnover	22%	0,5%	7,2%	5%
Brand value (US$)	23B	63B	29B	13B

Goal type

- Coercitive goal
  - Prison
- Utilitarian goal
  - Business
    - For clients / stakeholders / public
- Normative goal
  - University, religious groups

Goal and strategy

- See strategy chapter
- BMC (Business Model Canvas)

Culture

- Culture is the tacit social order of an organization
- Cultural norms define what is encouraged, discouraged, accepted, or rejected within a group
- A cultural change will involve a transformation of an organization through multiple phases

Culture

- (written or unwritten) assumptions about goals and products and employees
  - Engineering vs marketing company
    - HP vs. Microsoft
    - Motorola vs. Nokia
  - We are the best
    - IBM, MS, Google ..
  - Working is fun vs. working must be a pain
  - Blue collar work less prestigious than white collar work vs. equal opportunity
  - Women are paid less than men vs. equal opportunity
  - Working more is better (no leave before 8pm) vs. working too much is bad (no leave after 5pm)

Culture

- The boss knows more vs. all can contribute
- The boss is always right vs. all can suggest ideas and proposals
- The company only hires (men, whites, locals, ..) vs. equal opportunity for all
- Dressing codes: only tie and jacket vs. flip flops and T shirts
- Innovation and change vs. «we always did like this and it always worked»

«Let my people go surfing» (Yvon Chouinard, founder)

- Embrace (not just tolerate) work flexibility
- Read CVs from the bottom up (interests, activities, outdoor activities)
- Every year, 2 months paid leave to do environmental activities
- On site child care

- 2022. Patagonia owned by a fundation, profits are dedicated to stop climate change

Culture

- Culture is both unifying factor and restraint on change (especially on IT)

Politics

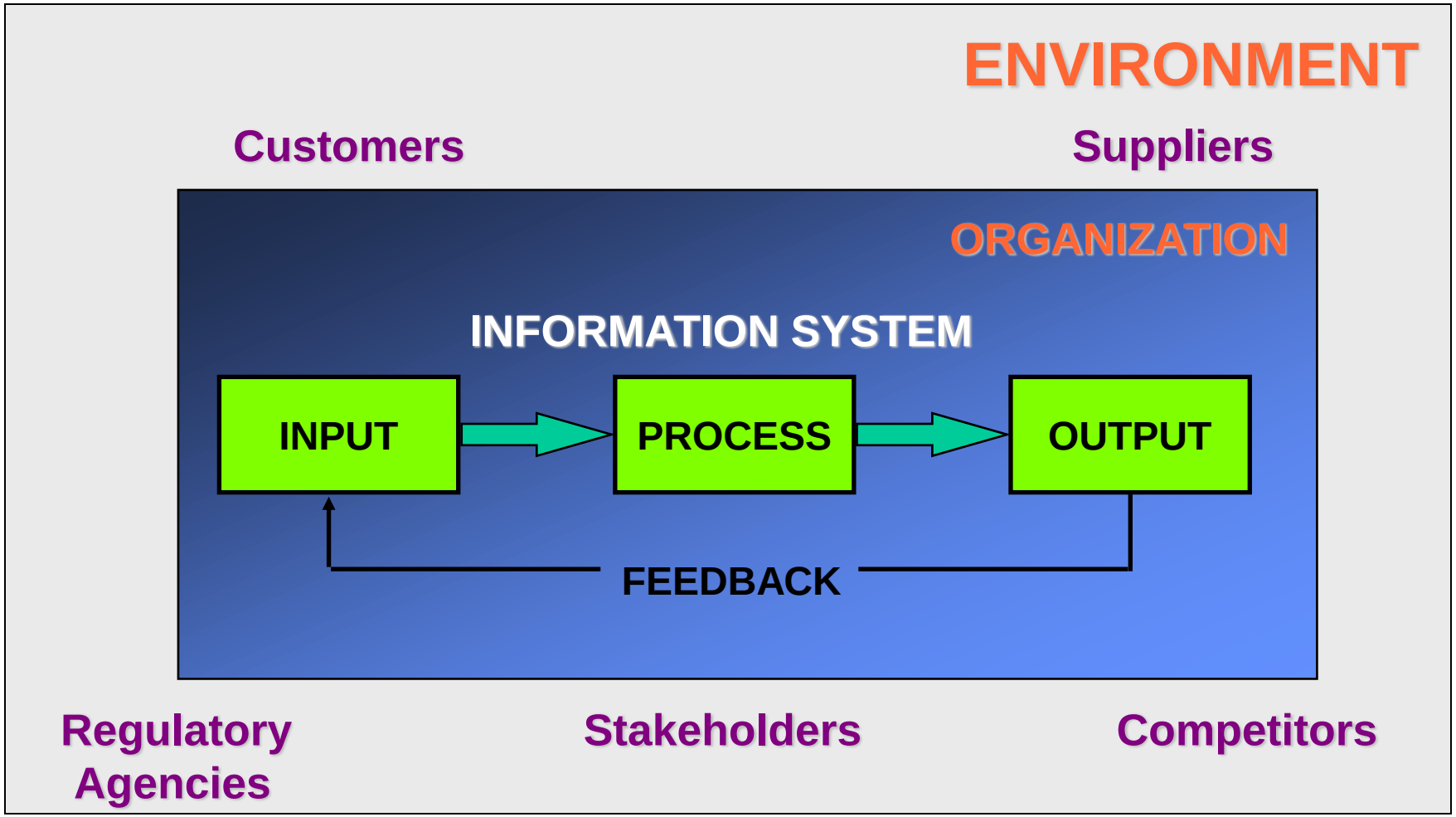
- Politics = activities related to making decisions in groups
  - Allocation of resources
  - Allocation of status

Politics and conflict

- Conflict is the rule, not the exception
  - People cover different roles
  - They have different points of views, objectives, interests
    - Personal career, influence, compensation
  - While resources are scarce
- Conflict resolution must be ongoing, using different techniques
  - Brute force, hidden decisions and rules

    Vs.
  - Discussion, transparent decisions and rules

Environment

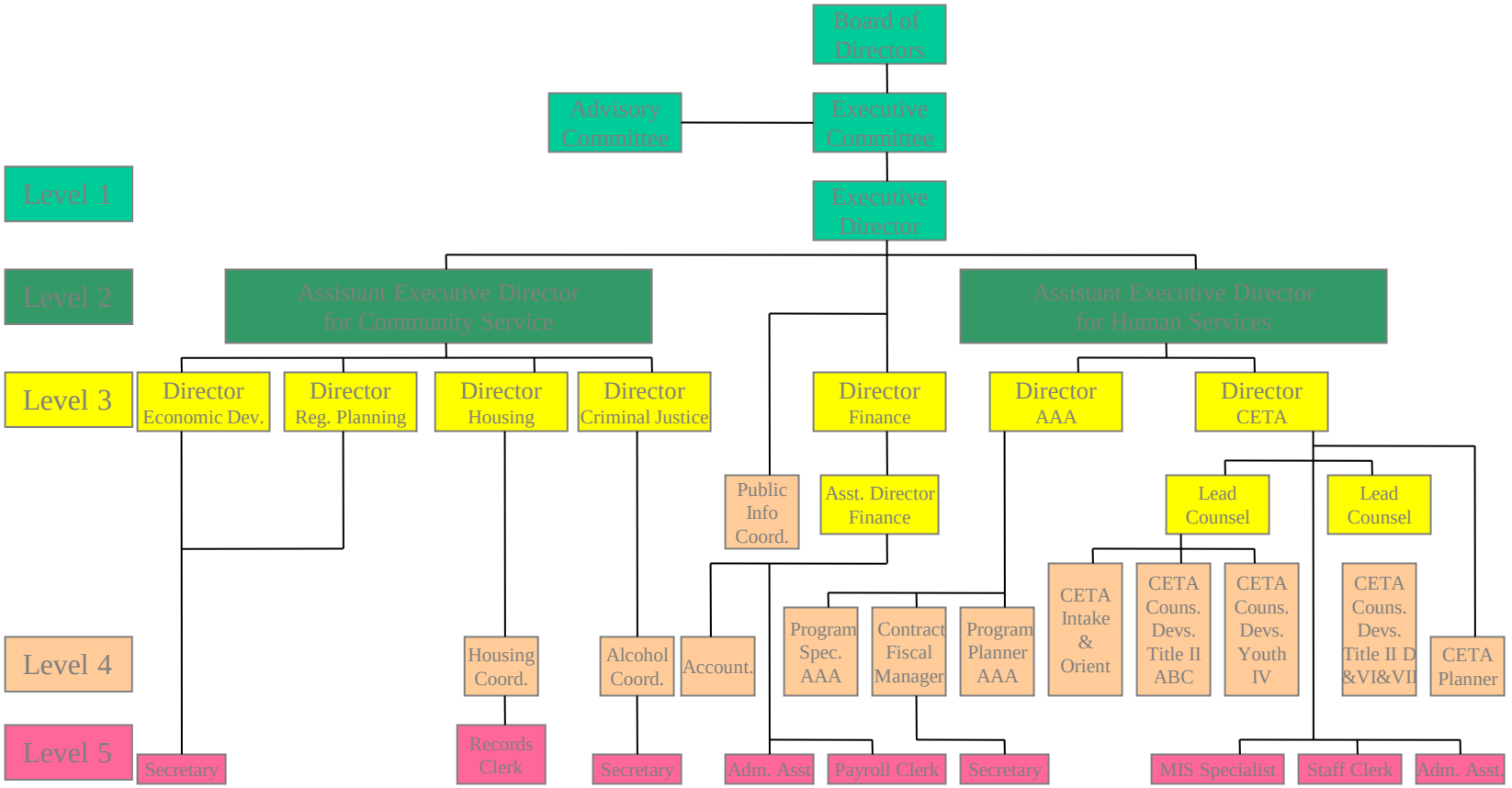


Environment

- Resources and constraints
  - cost of labour, currency
- Governments/ regulatory agencies
  - Rights of employees/power of trade unions, taxation, pollution laws, freedom of trade
- Competitors
- Financial institutions
- Knowledge
  - Access to skilled personnel or consulting

Environment

Structure


Board of Directors
Advisory Committee
Executive Committee
Executive Director
Level 1
Level 2
Level 3
Level 4
Level 5
Assistant Executive Director for Community Service
Assistant Executive Director for Human Services
Director Economic Dev.
Director Reg. Planning
Director Housing
Director Criminal Justice
Director Finance
Director AAA
Director CETA
Public Info Coord.
Asst. Director Finance
Lead Counsel
Lead Counsel
Housing Coord.
Alcohol Coord.
Account.
Program Spec. AAA
Contract Fiscal Manager
Program Planner AAA
CETA Intake & Orient
CETA Couns. Devs. Title II ABC
CETA Couns. Devs. Youth IV
CETA Couns. Devs. Title II D &VI&VII
CETA Planner
Secretary
Records Clerk
Secretary
Adm. Asst
Payroll Clerk
Secretary
MIS Specialist
Staff Clerk
Adm. Asst

Formalization

- Level of description of an activity
  - Full formalization = algorithm
    (also called SOP Standard Operation Procedure)
  - No formalization = loose description

	More formalization	Less formalization
Efficiency	more	Less
Flexibility (management of exceptions, capability to decide)	less	More
Predictability	more	Less
Resistance to change	more	less

- More formalization is typically linked with IT support

SOP

Standard Operating Procedures

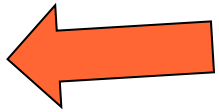
- Precise rules, procedures and practices to cope with virtually all expected situations
  - Ex bank transfer
  - Ex call center, customer support level 1
- SOPs are typically the starting point for automation using the IS

Centralization

- Where, in the hierarchical levels, to allocate decision power
  - Centralized organization: decision power only at higher levels
  - Decentralized organization: decision power also at lower levels

Bank

- Activity: mortgage allocation
  - decide amount given
- Levels
  - Main branch (1)
    - Director
    - Financial services director
  - Agency (100)
    - Director
    - Employees (1000) – open dossier (sop)



Bank – option 1 centralized

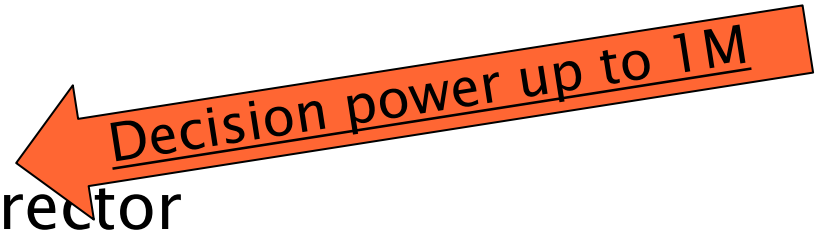
- Levels
  - Main branch (1)
    - Director
    - Financial services director
  - Agency (100)
    - Director
    - Employees (1000) – open dossier (sop)

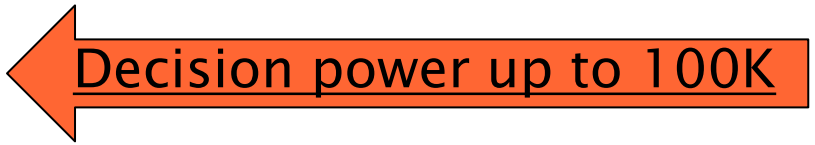
Bank – option 2 decentralized

- Levels
  - Main branch (1)
    - Director
    - Financial services director
  - Agency (100)
    - Director
    - Employees (1000) – open dossier (sop)

Bank – option 3 parametered

- Levels
  - Main branch (1)
    - Director
    - Financial services director
  - Agency (100)
    - Director
    - Employees (1000) – open dossier (sop)





Centralization

- More
  - Pros: homogeneity
  - Cons: bottlenecks, slow response times
- Less
  - Pros: better response times
  - Cons: no (less) homogeneity, risks of fraud

Specialization

- Level of detail of activities and level of specificity of employees

Bank

- Option 1 – less specialization
  - Activity: mortgage allocation

- Option 2 – more specialization
  - Activity1 : mortage for industrial activities
  - Activity2 : mortgage for homes, first home
  - Activity3: mortgage for homes, vacation homes

- Specific activities are assigned to specialized roles (employees) in the organization
  - Specialist in industrial mortgages
  - Specialist in home first mortgage
  - Specialist in home vacation mortgage

Specialization

- More specialization is typically linked with more formalization

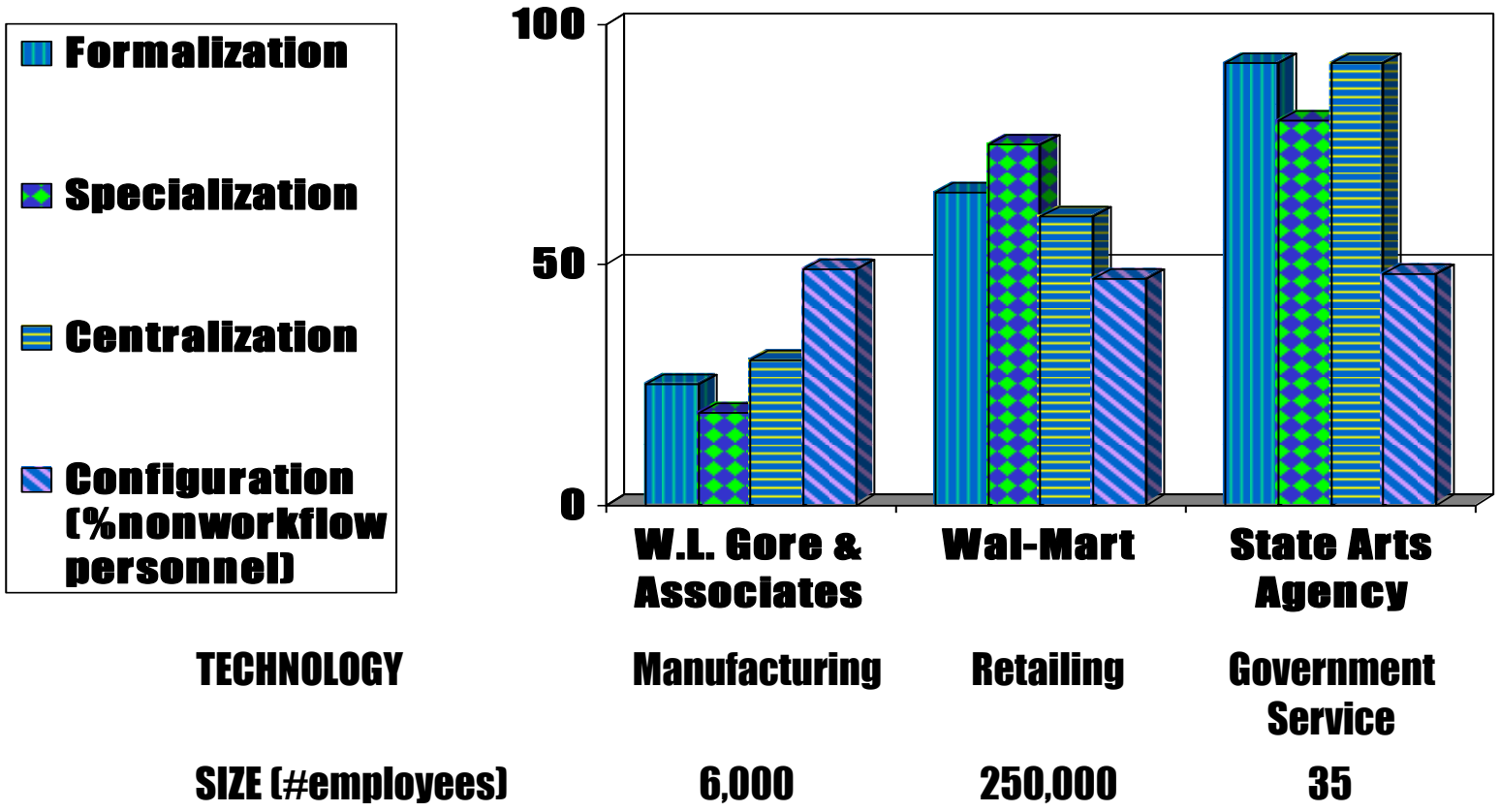
Specialization

- More spec
  - Pros: more efficiency, precision
  - Cons: less flexibility
    - New requests
    - Workload balancing

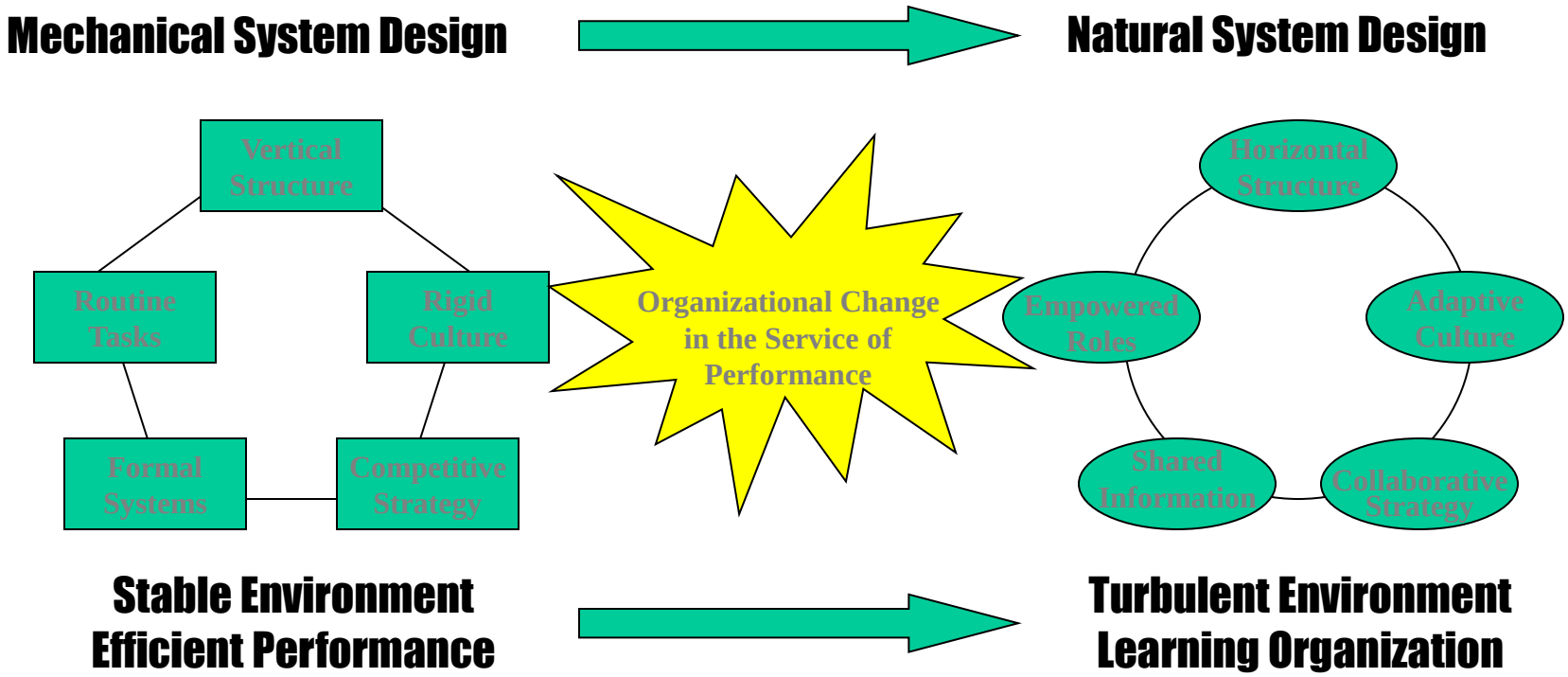
Bureaucracy

- High level of formalization
- High level of specialization
- High centralization (no decision power at lower levels)

Ex.: Characteristics



Org Design Approaches



Source: Adapted from David K. Hurst, Crisis and Renewal: Meeting the Challenge of Organizational Change (Boston, Mass.: Harvard Business School)

Organizational designs

Mechanical / hierarchical

- Follow order from the top
- Predict and control
- Jobs (activities of a worker are fixed)

Learning / reactive

- Autonomy and self organization
- Sense and react
- Roles (worker can change roles / activities)

Organizational types

- Entrepreneurial: Startup business
- Machine bureaucracy: Mid-sized manufacturing firm
- Divisionalized bureaucracy: Fortune 500
- Professional bureaucracy: Law firms, hospitals
- Adhocracy: Consulting firm

Organizational structures

Organizational structure

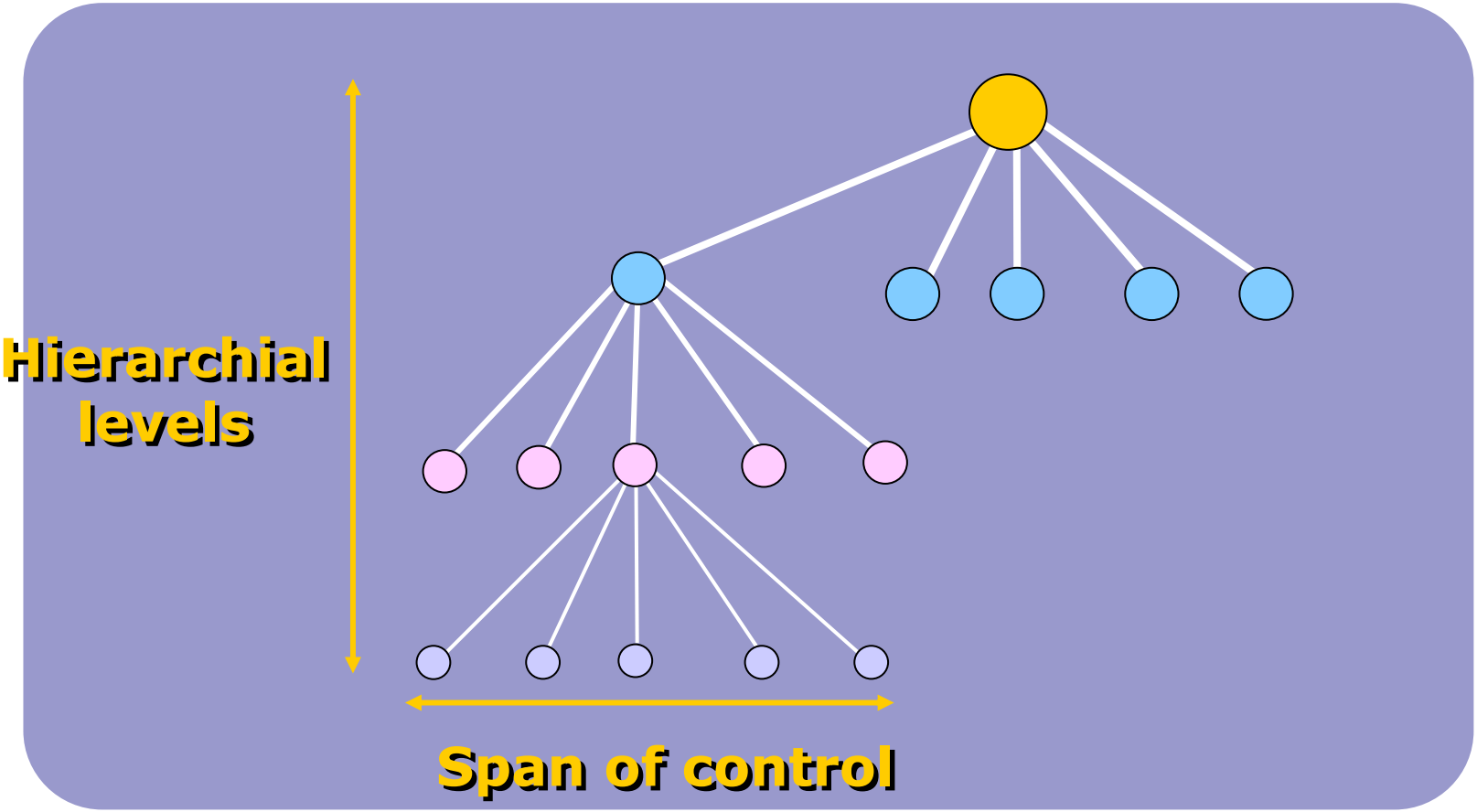
- Node: organizational unit, as group of people or other organizational units
- Link: formal dependency
- Depicted in organization chart

- Structure must be completed by mechanisms to support
  - Communication
  - Coordination
- Vertical and horizontal flow of information and control

Organizational unit – OU

- Called in many ways
  - Function
  - Unit
  - Business unit
  - Branch
  - Office
  - Direction
  - Area
  - Group

Dimensions

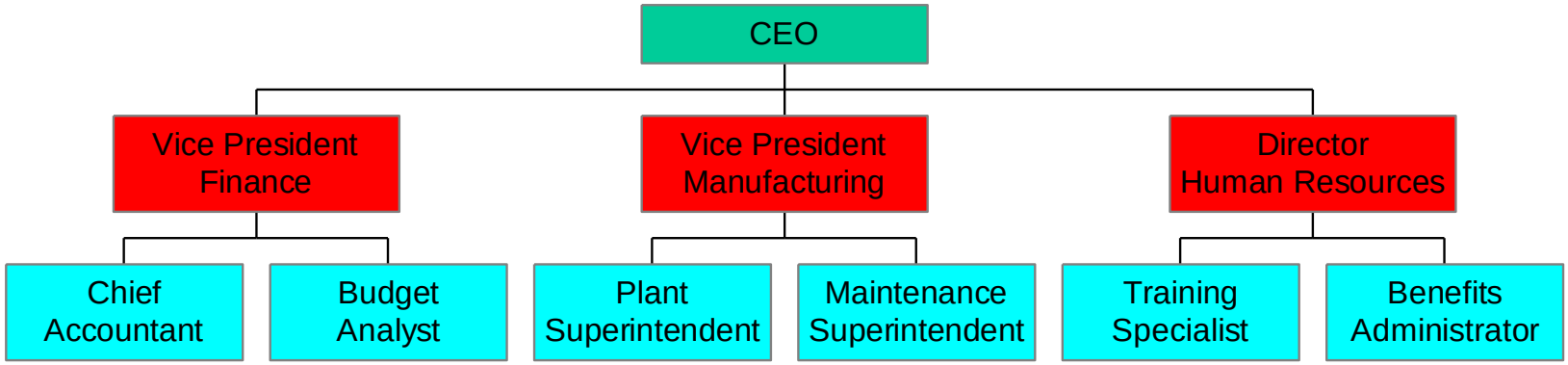


Dimensions – 2

- Given the same size
  - Lower depth
    - Faster reaction
    - Higher load on upper levels – or more delegation
  - Vertical organization: more depth
    - Army: General, Major, Colonel, Captain ….
  - Horizontal organization: less depth
    - Catholic church: Pope, Bishop, Priest

- 1000 people
- 3 levels: 333 people in lowest unit
- 10 levels: 10 people in lowest unit

A Sample Organization Chart



Links

- Link: control, communication, coordination channel

- Vertical
- Horizontal

Links

- Vertical links: to control and communicate
  - Employees at lower level must perform activities coherent with goals set at higher level
  - Managers at higher level must know activities and results of lower level
- Horizontal links: to communicate
  - Employees in different units must share information and coordinate themselves

Hierarchy

- Given level i in the structure
  - Capability / possibility to decide
  - Capability to access information
  - Capability to control level i+1

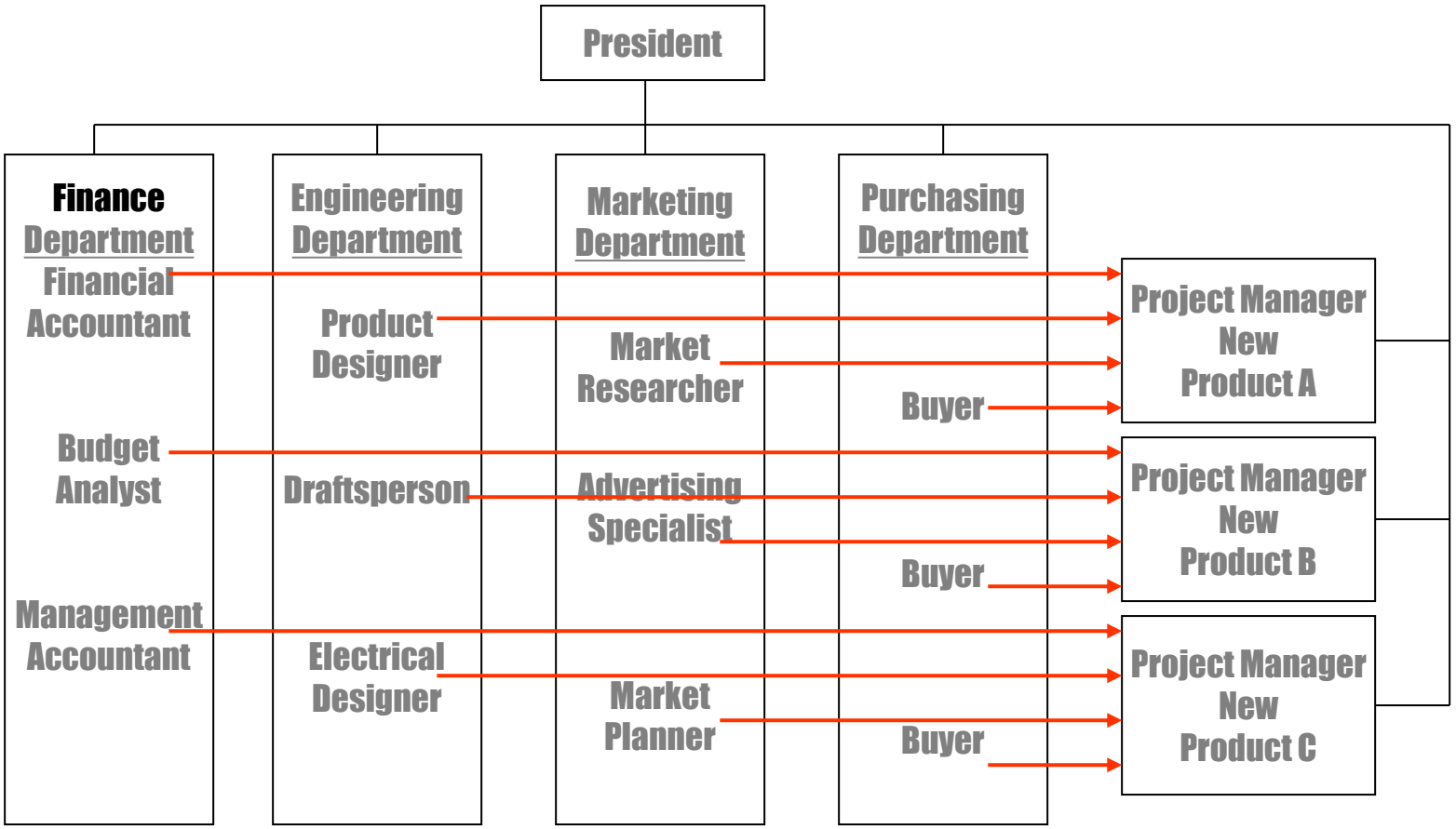
Vertical links – tools

- Command chain
  - Problem that can't be solved at level x is reported at level x-1
- Rules/procedures
  - Standard way of solving problem/performing activity (from rules of thumb to SOP)
- Plans
  - Ex budget
- Vertical IS
  - To define and diffuse reports and internal memos, KPIs and other measures

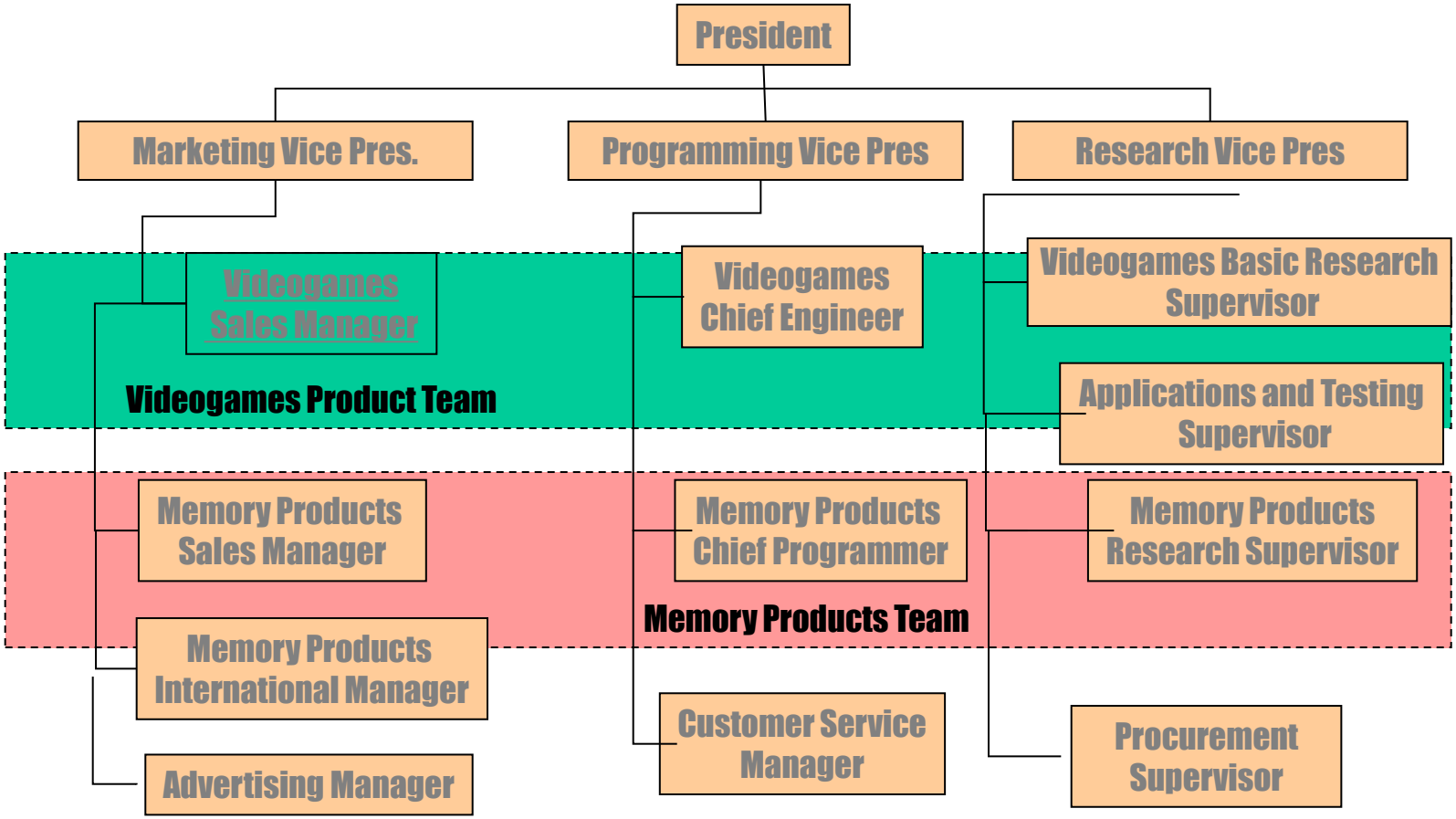
Horizontal links – tools

- IS
  - Data base of shared information
- Direct contact
  - Liaison person: charged of contact with other unit
  - Temporary colocation of employees from different units
- Full time integrator role
  - Project manager, product manager, brand manager
- Task force
  - Temporary group of employees from different units
- Team
  - Same as task force, but permanent

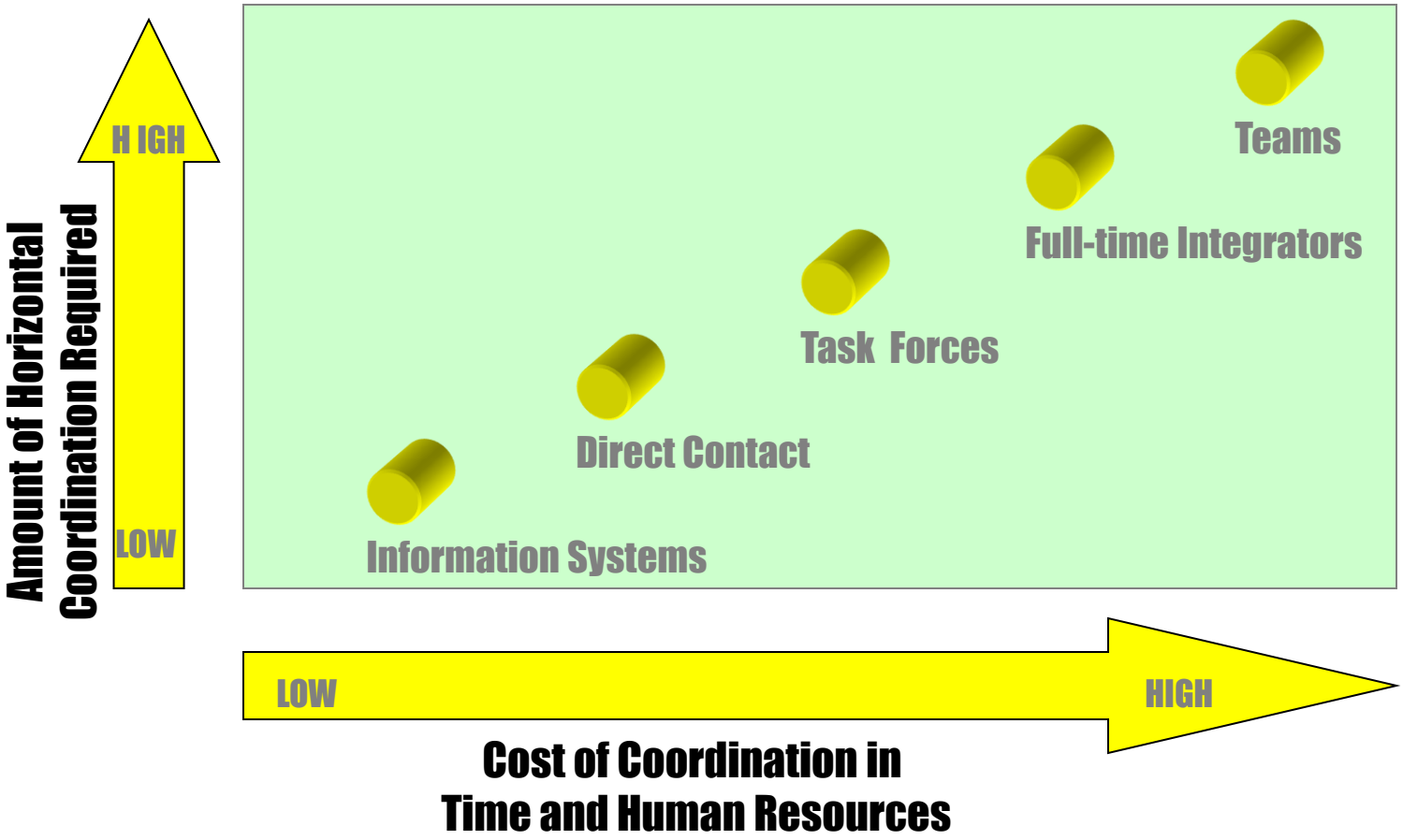
Project Manager



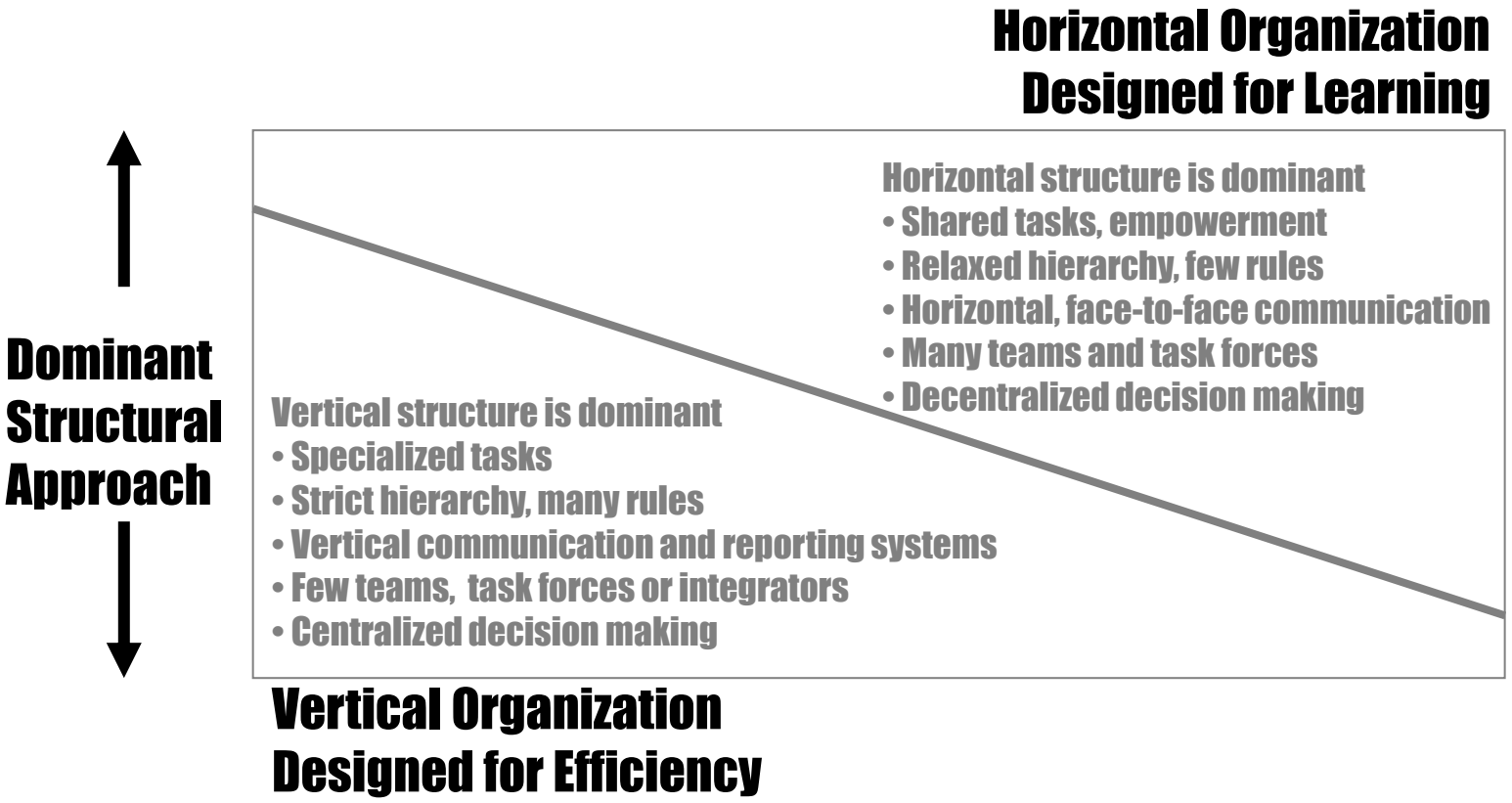
Teams at Wizard Software Company



Mechanisms for Horizontal links



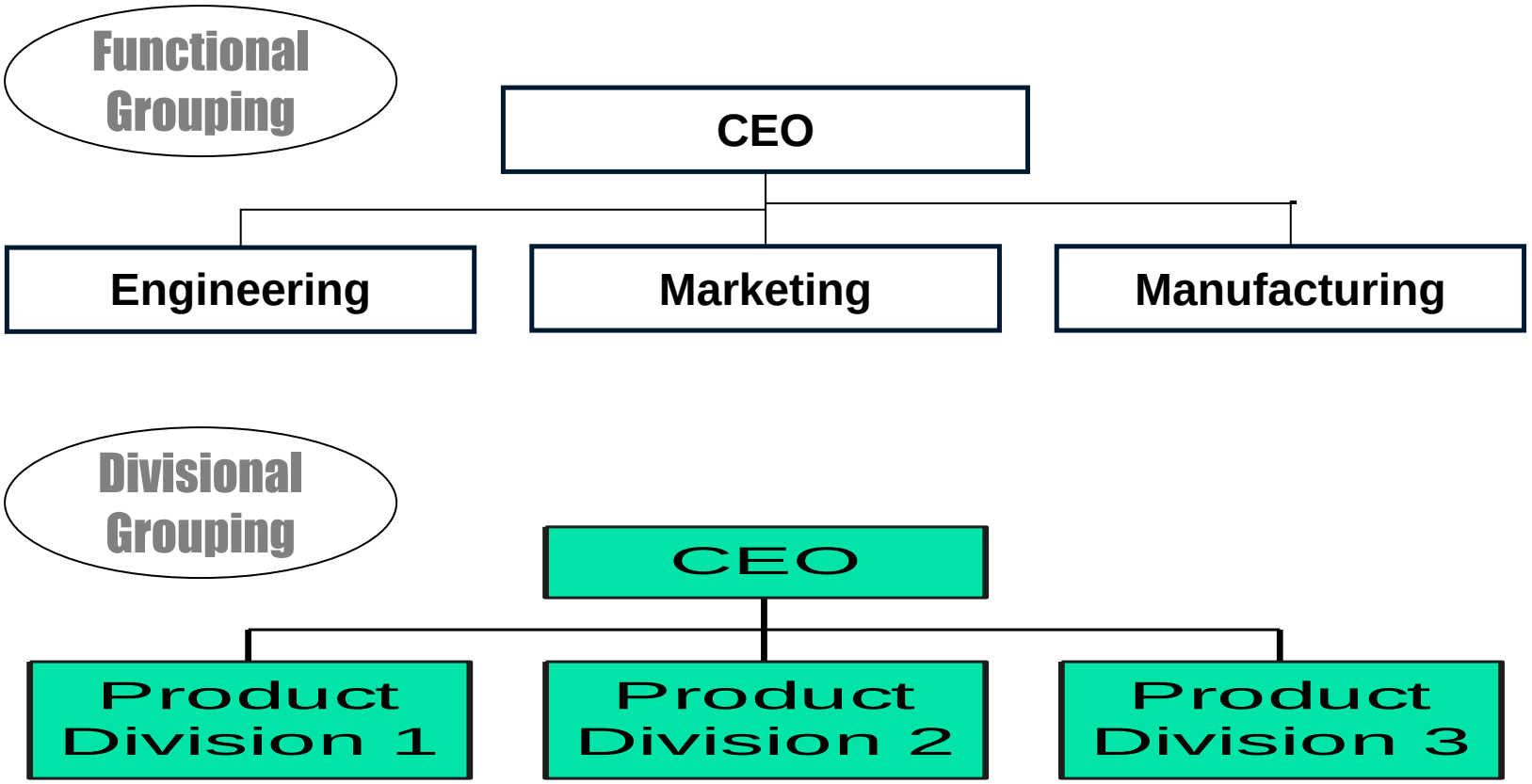
Org Design to Efficiency vs. Learning



Structures

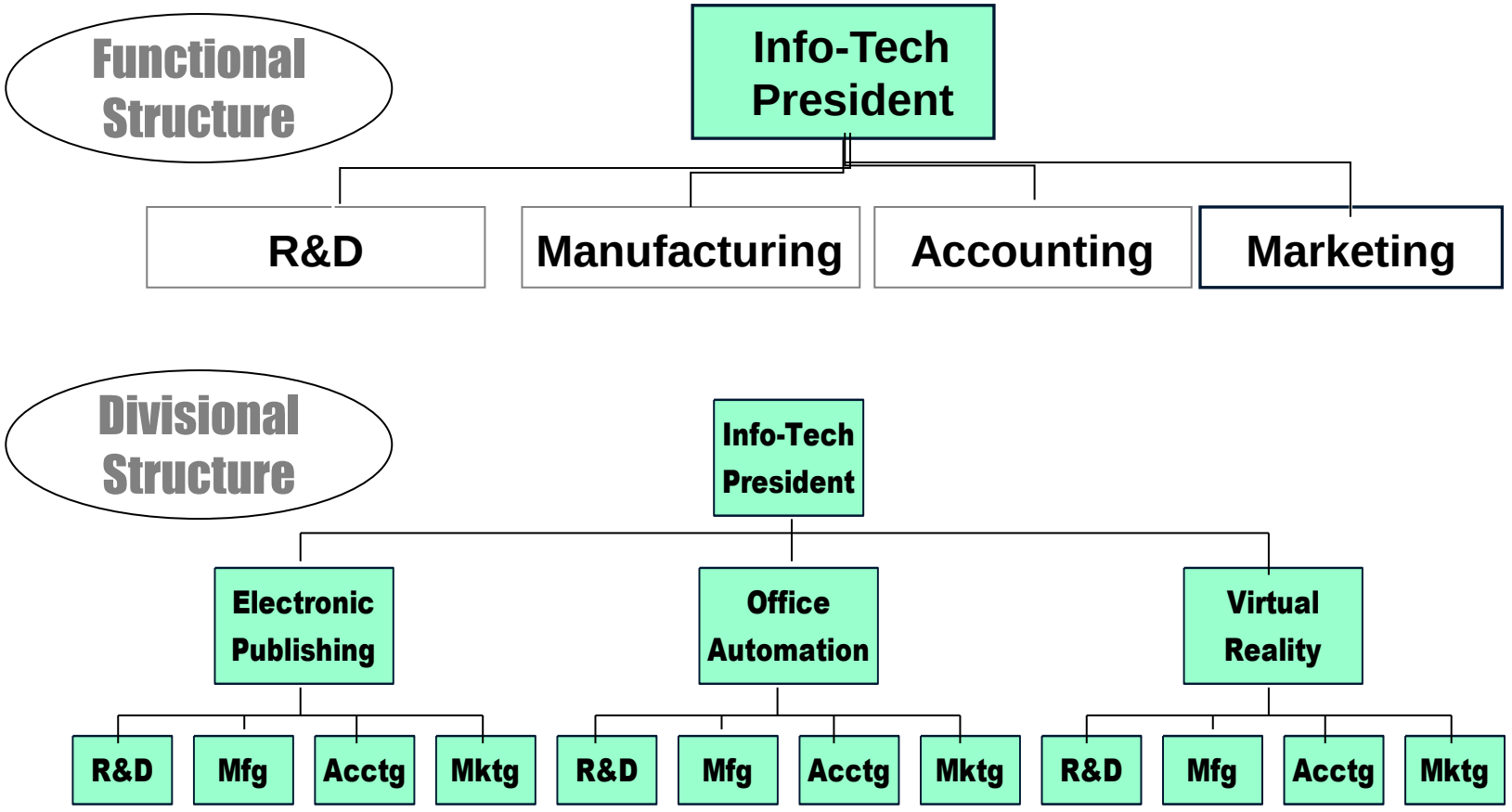
- Functional
  - Employees grouped according to similar functions, skills (ex all RD together, all manufacturing together)
  - Functions are NOT repeated
- Divisional
  - Employees grouped by product (ex car division, truck division)
  - Functions are REPEATED in each division/per product
- Geographic
  - Functions are REPEATED per geographical area
- Matrix/multifocused
  - Grouping by more than one criterion
- Process /horizontal
  - Employees grouped by process

Functional, divisional



Source: Adapted from David Nadler and Michael Tushman, *Strategic Organization Design* (Glenview, Ill.: Scott Foresman, 1988), 68.

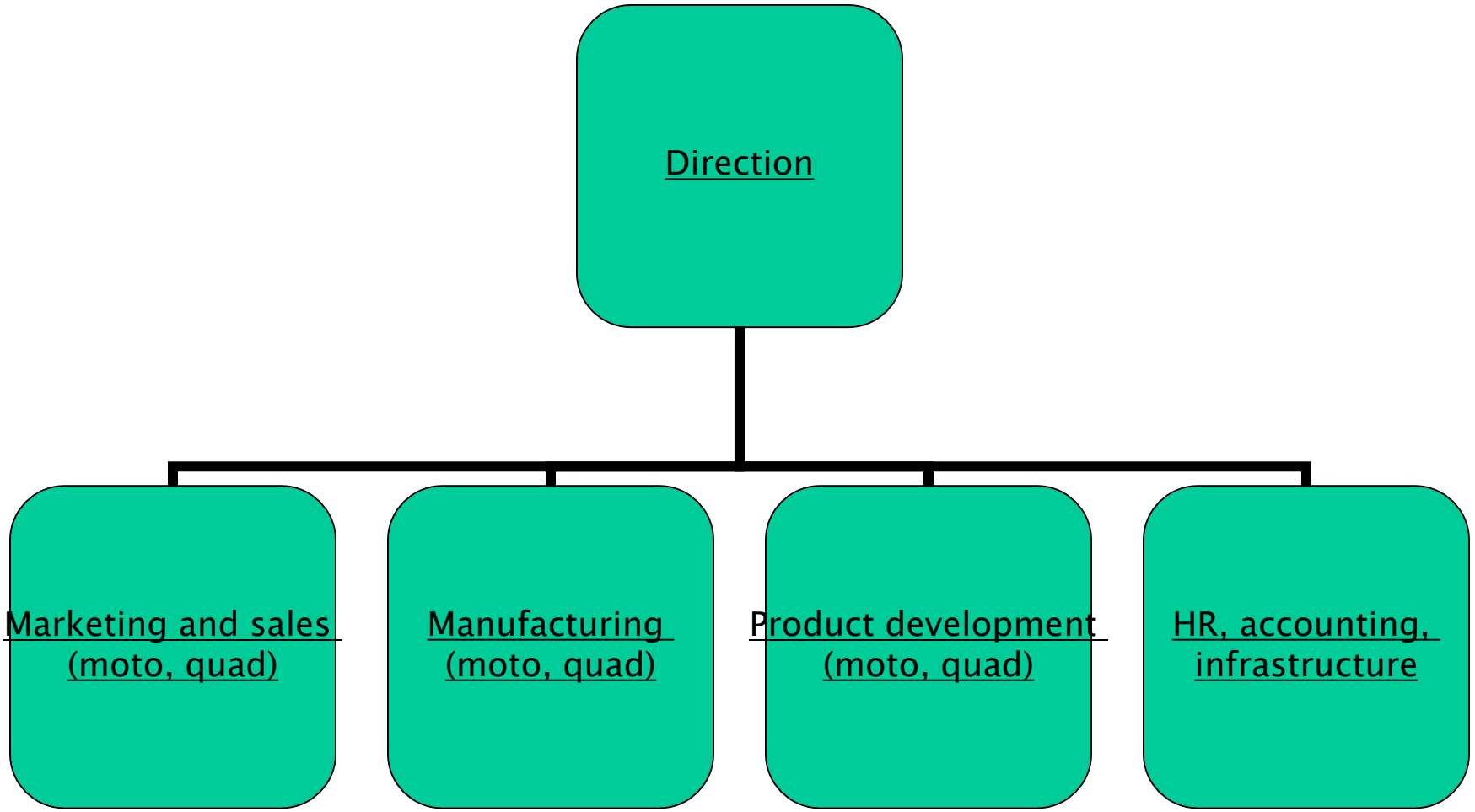
From Functional to Divisional



(Fake) Company MBK

- Products: motorcycles and quads
  - 1000 employees overall
- How to structure?
  - Functional
  - Divisional

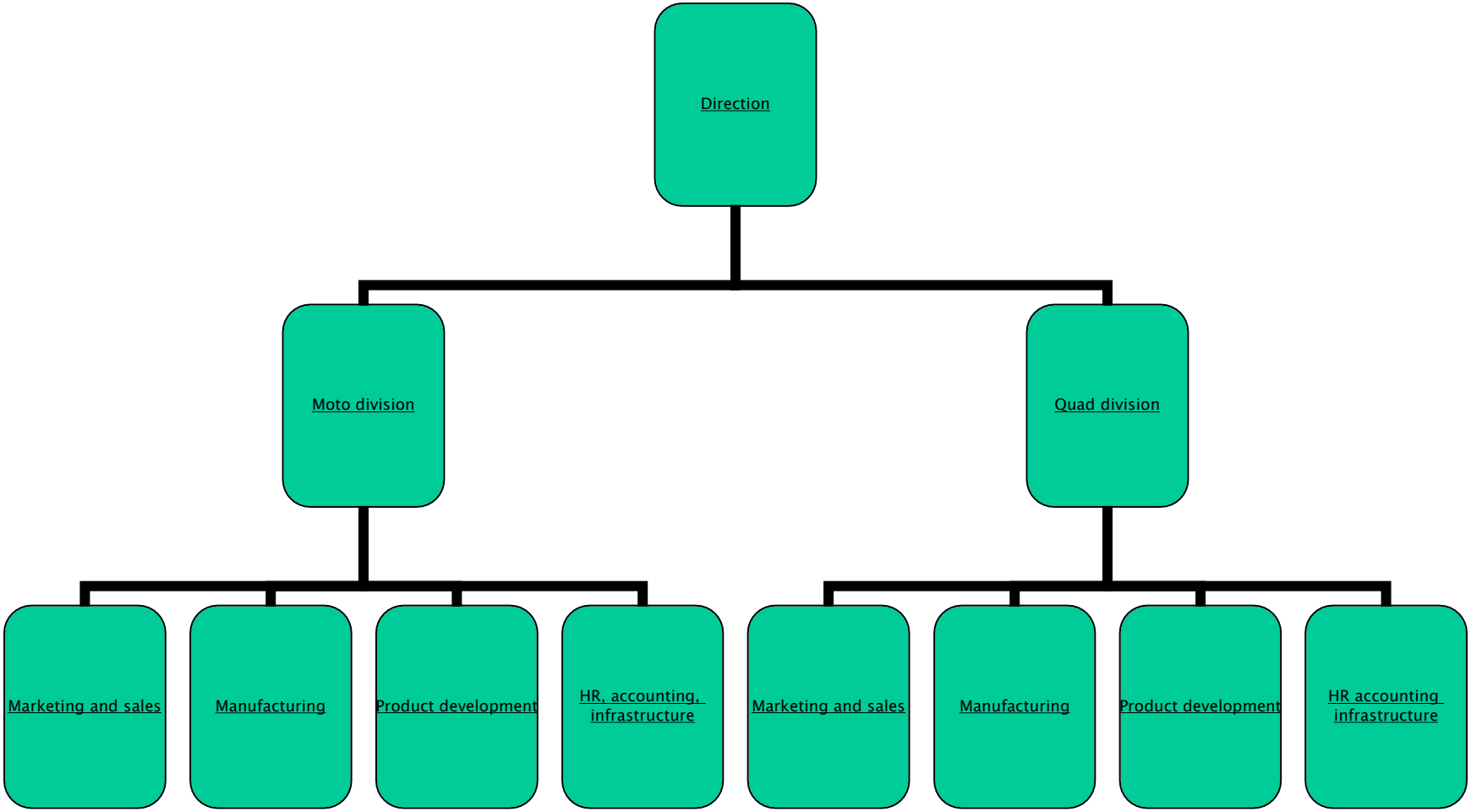
Case 1: functional



MBK – functional

- Functional
  - 200 marketing
    - 1 expert in focus groups
    - 1 expert survey
  - 600 manufacturing
  - 100 prod dev
  - 100 HR, account, infrastructure

Case 2: Divisional



MBK – Divisional

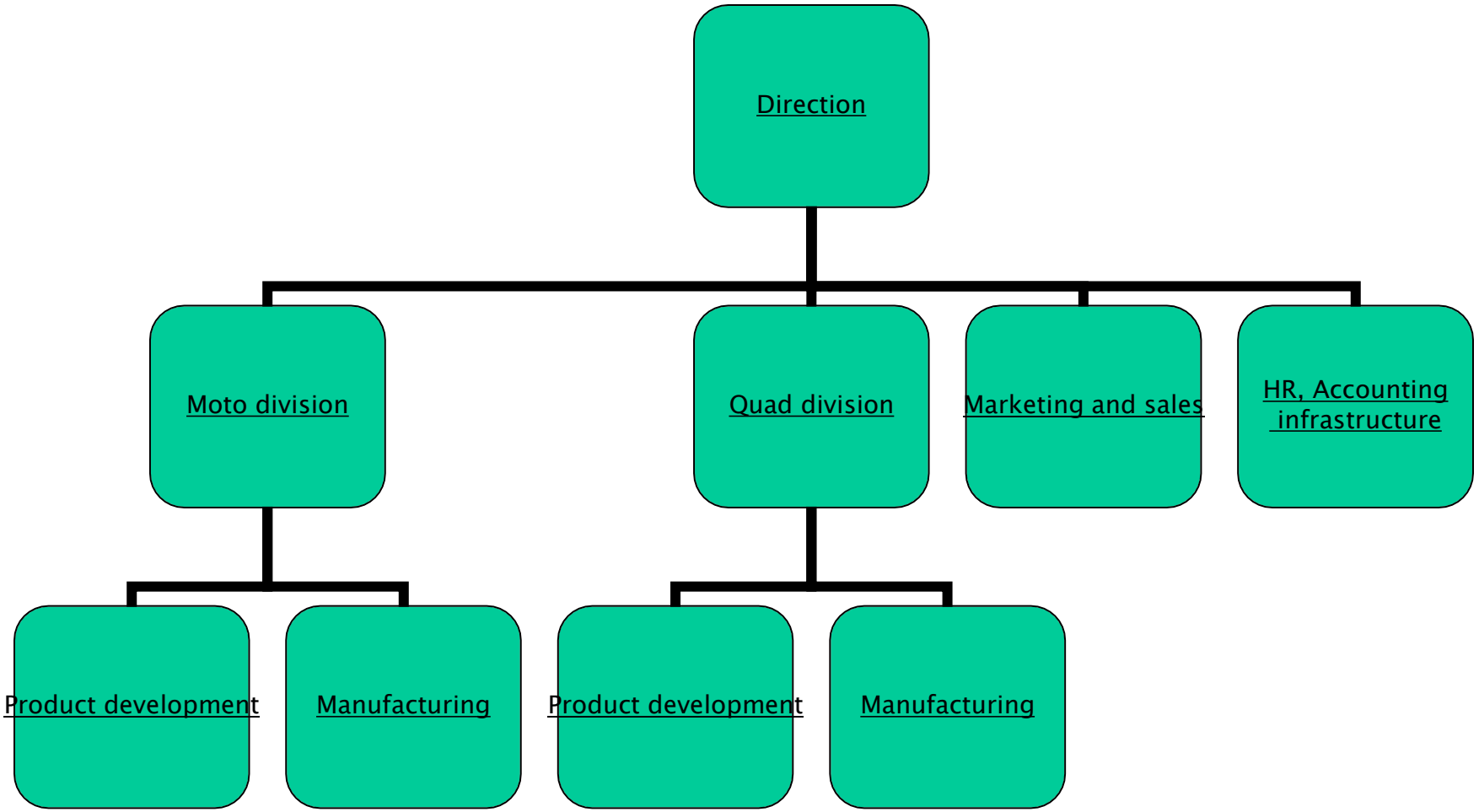
Quad division

- 90 marketing, 0.5 expert focus group
- 300 manufacturing
- 50 prod dev
- 50 HR, account, infrastructure

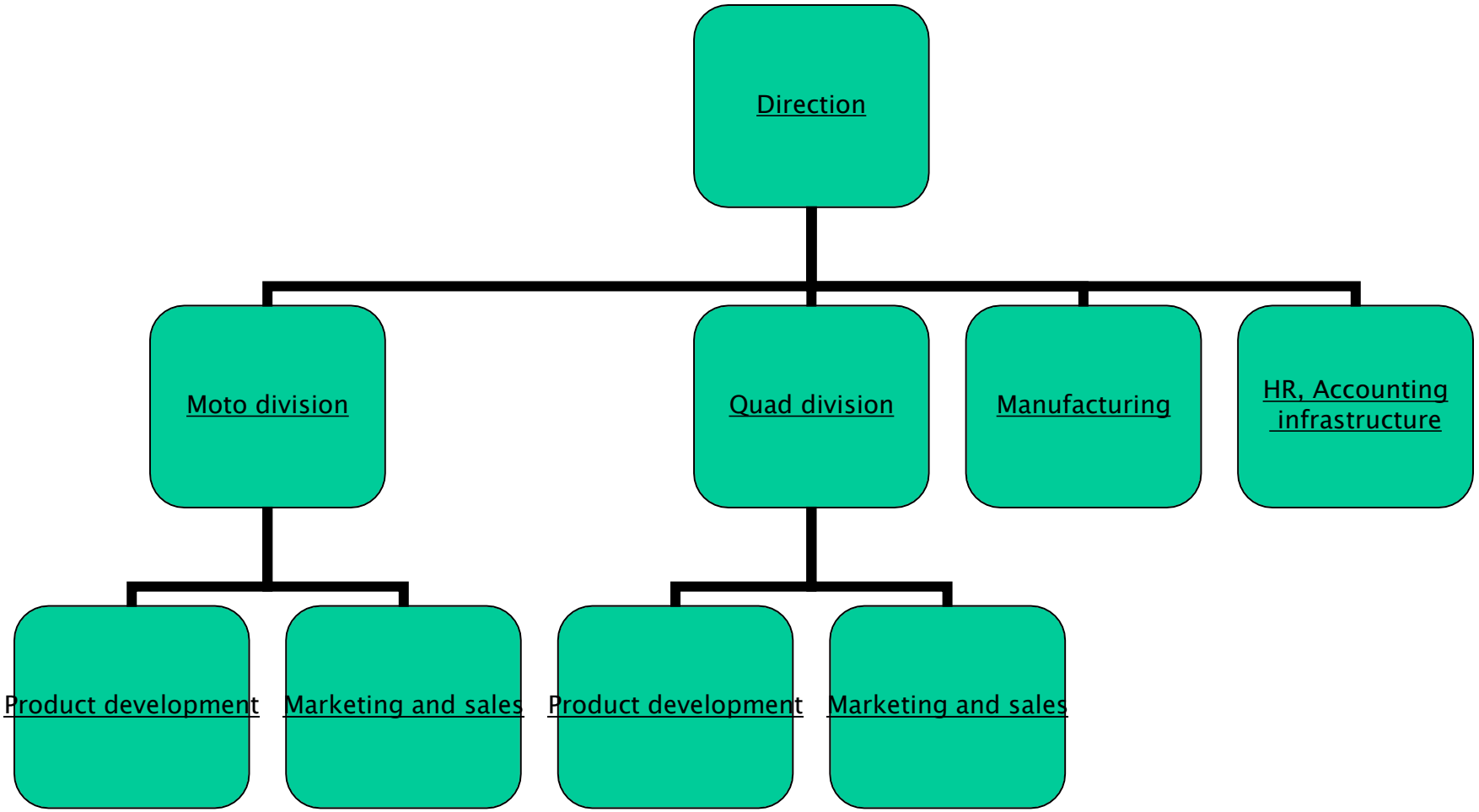
Moto division

- 110 marketing
- 300 manufacturing
- 50 prod dev
- 50 HR, account, infrastructure

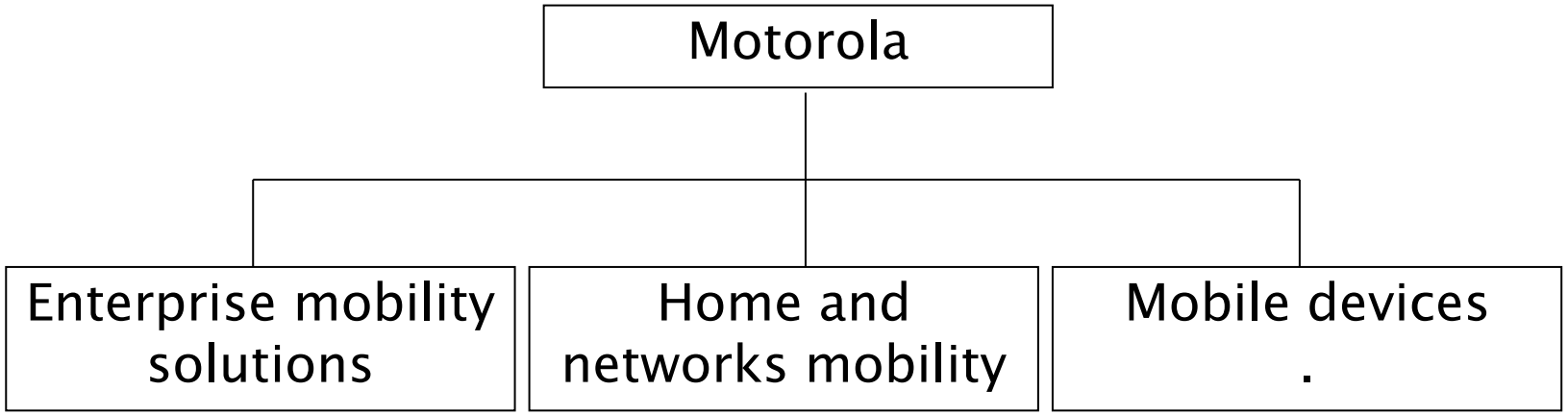
Case 3: hybrid 1



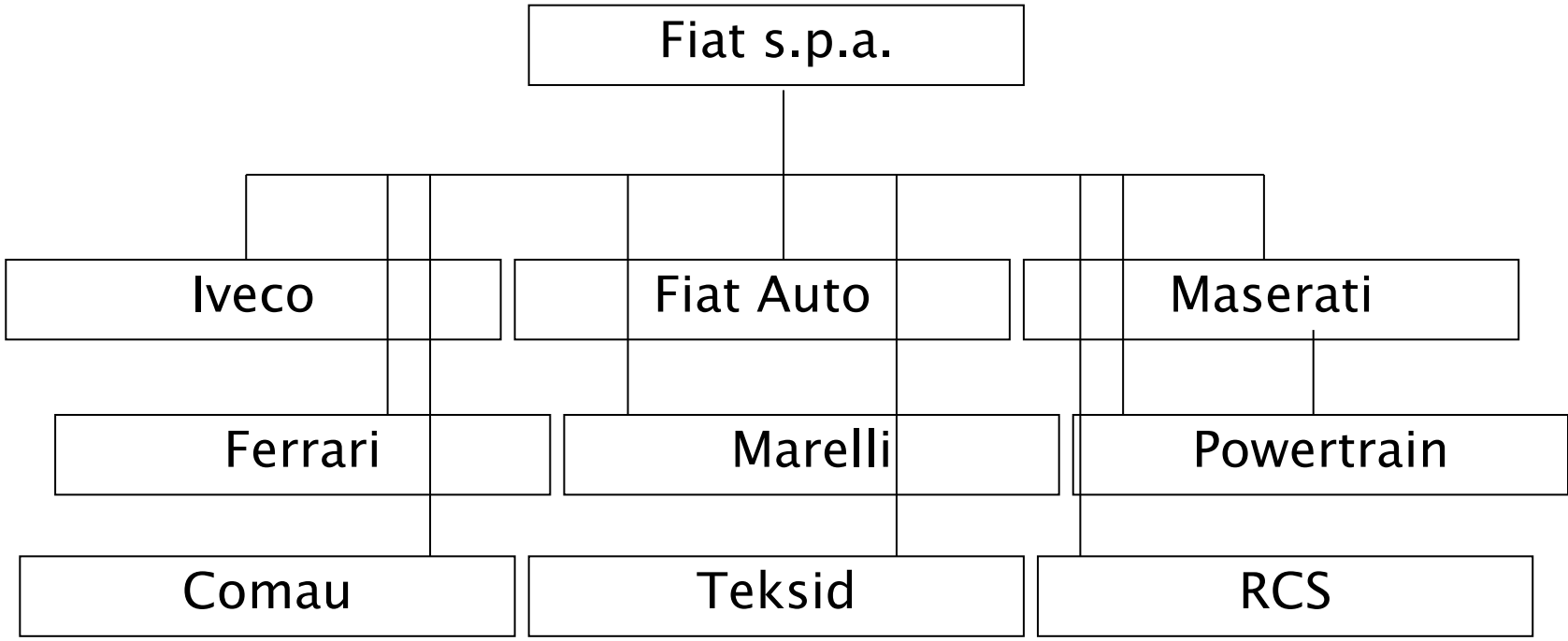
Case4 : hybrid 2



Ex. Divisional



Ex. divisional



Functional Structure

- STRENGTHS:
  - Allows economies of scale within functional departments
  - Enables in-depth knowledge and skill development
  - Enables organization to accomplish functional goals
  - Is best with only one or a few products
- WEAKNESSES:
  - Slow response time to environmental changes
  - May cause decisions to pile on top, hierarchy overload
  - Leads to poor horizontal coordination among departments
  - Results in less innovation
  - Involves restricted view of organizational goals

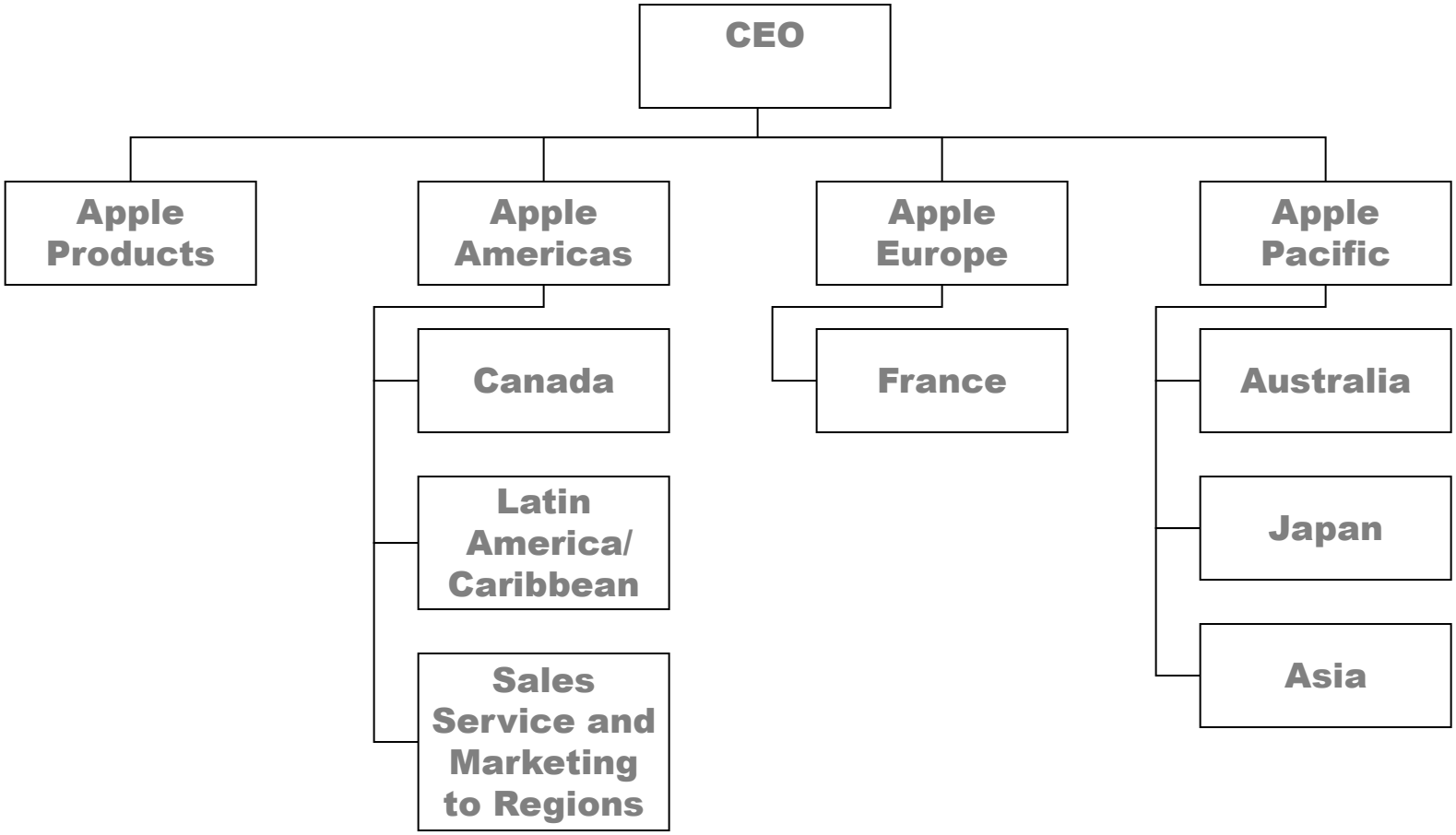
Source: Adapted from Robert Duncan, "What Is the Right Organization Structure? Decision Tree Analysis Provides the Answer," *Organizational Dynamics* (Winter 1979): 429.

Divisional Structure

- STRENGTHS:
  - Suited to fast change in unstable environment
  - Leads to client satisfaction because product responsibility and contact points are clear
  - Involves high coordination across functions
  - Allows units to adapt to differences in products, regions, clients
  - Best in large organizations with several products
  - Decentralizes decision-making
- WEAKNESSES:
  - Eliminates economies of scale in functional departments
  - Leads to poor coordination across product lines
  - Eliminates in-depth competence and technical specialization
  - Makes integration and standardization across product lines difficult

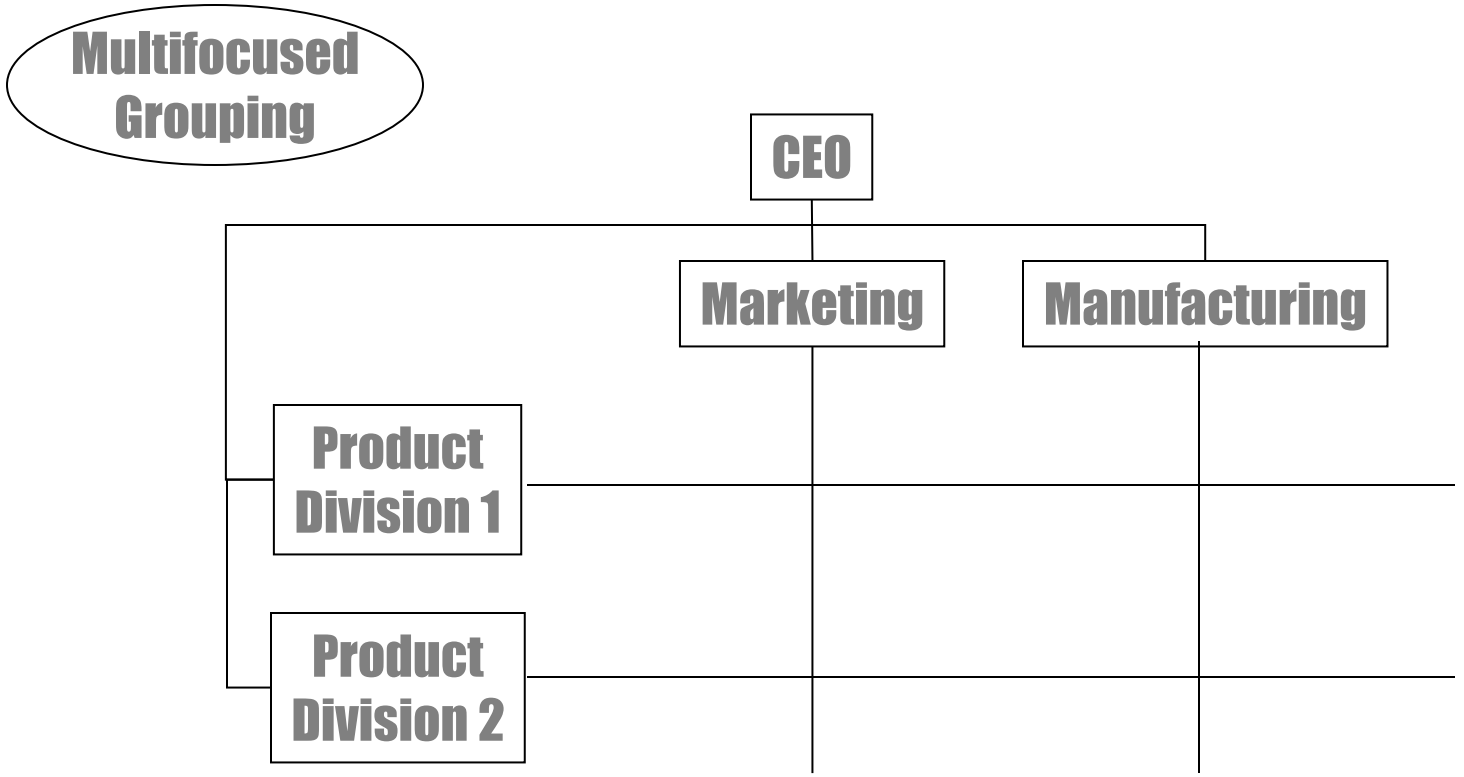
Source: Adapted from Robert Duncan, "What Is the Right Organization Structure? Decision Tree Analysis Provides the Answer," *Organizational Dynamics* (Winter 1979): 431.

Geo Structure Apple Computer



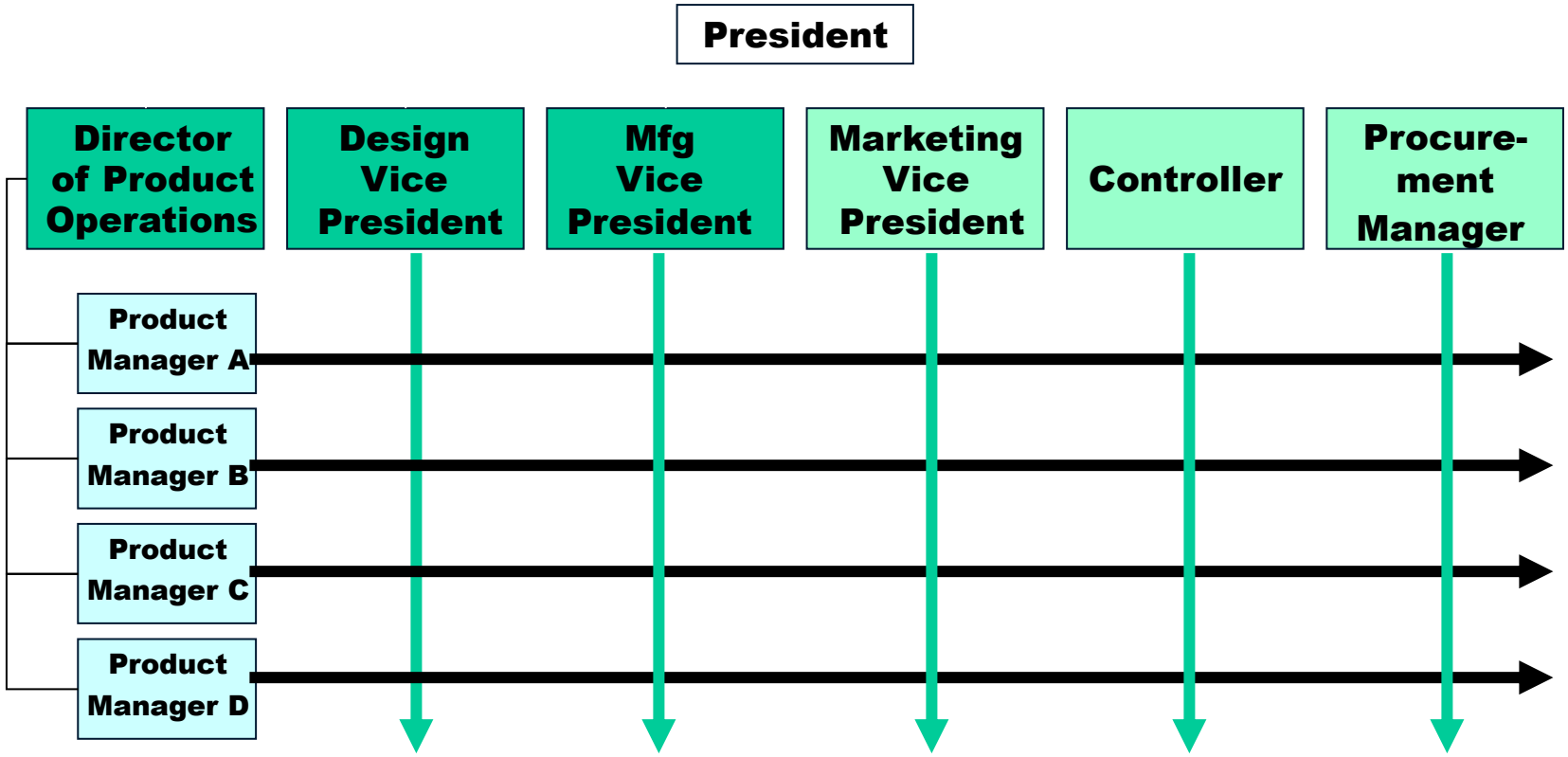
Source: www.apple.com

Matrix /Multifocused structure



Source: Adapted from David Nadler and Michael Tushman, *Strategic Organization Design* (Glenview, Ill.: Scott Foresman, 1988), 68.

Dual-Authority / Matrix



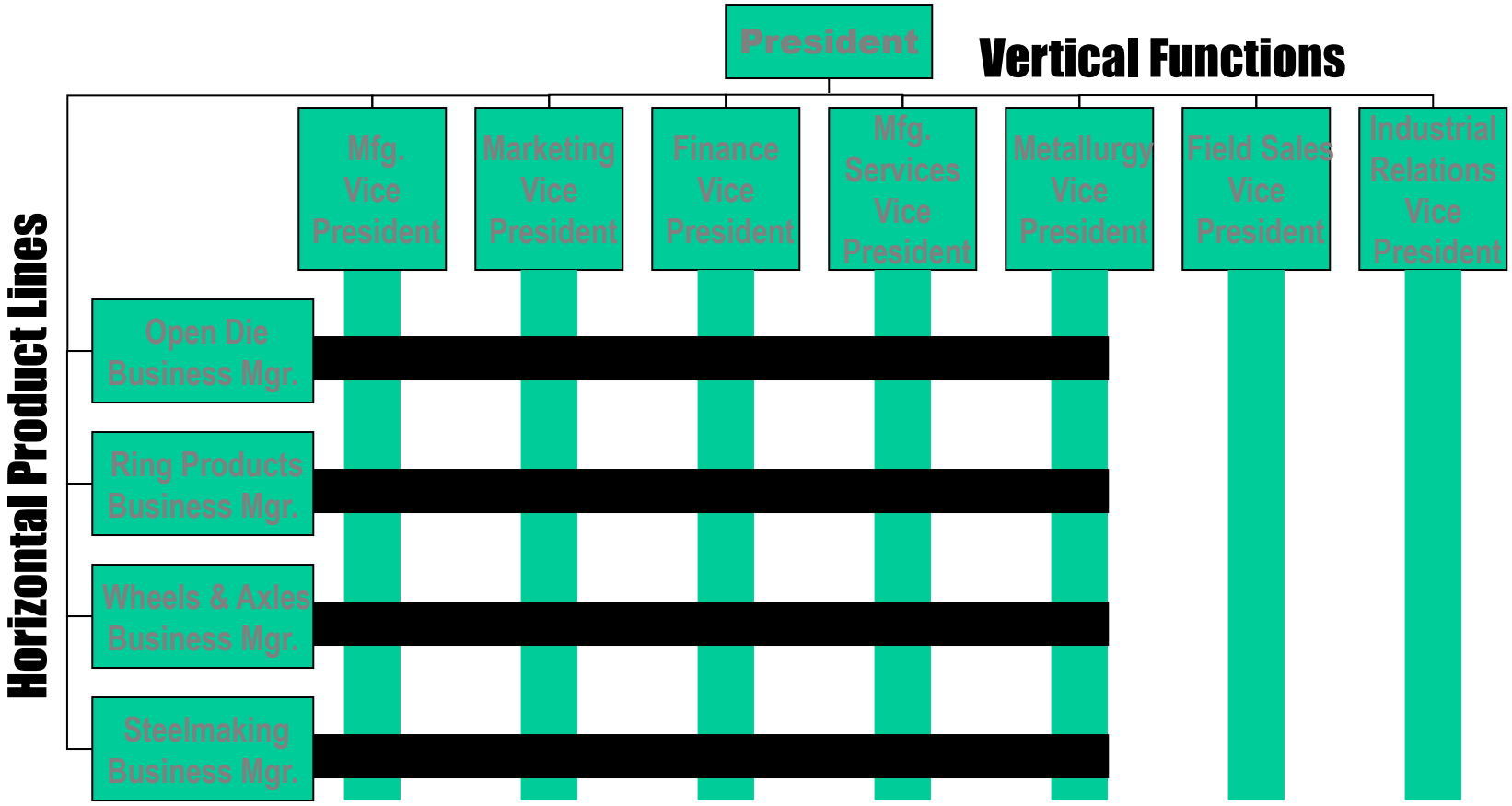
Matrix Structure

- STRENGTHS:
  - Achieves coordination necessary to meet dual demands from customers
  - Flexible sharing of human resources across products
  - Suited to complex decisions and frequent changes in unstable environment
  - Provides opportunity for both functional and product skill development
  - Best in medium-sized organizations with multiple products

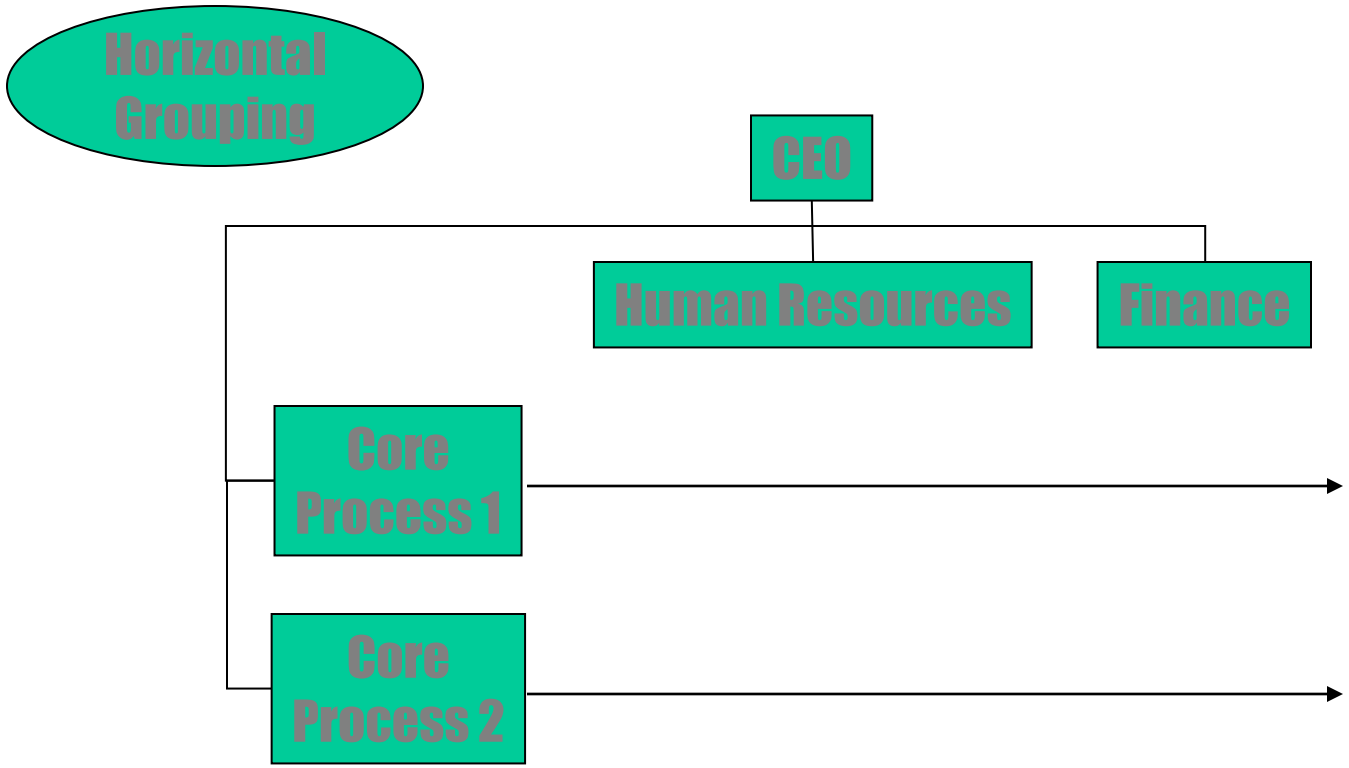
- WEAKNESSES:
  - Causes participants to experience dual authority, which can be frustrating and confusing
  - Means participants need good interpersonal skills and extensive training
  - Is time consuming; involves frequent meetings and conflict resolution sessions
  - Will not work unless participants understand it and adopt collegial rather than vertical-type relationships
  - Requires great effort to maintain power balance

Source: Adapted from Robert Duncan, "What Is the Right Organization Structure? Decision Tree Analysis Provides the Answer,"*Organizational Dynamics* (Winter 1979): 429.

Matrix: Worldwide Steel Company

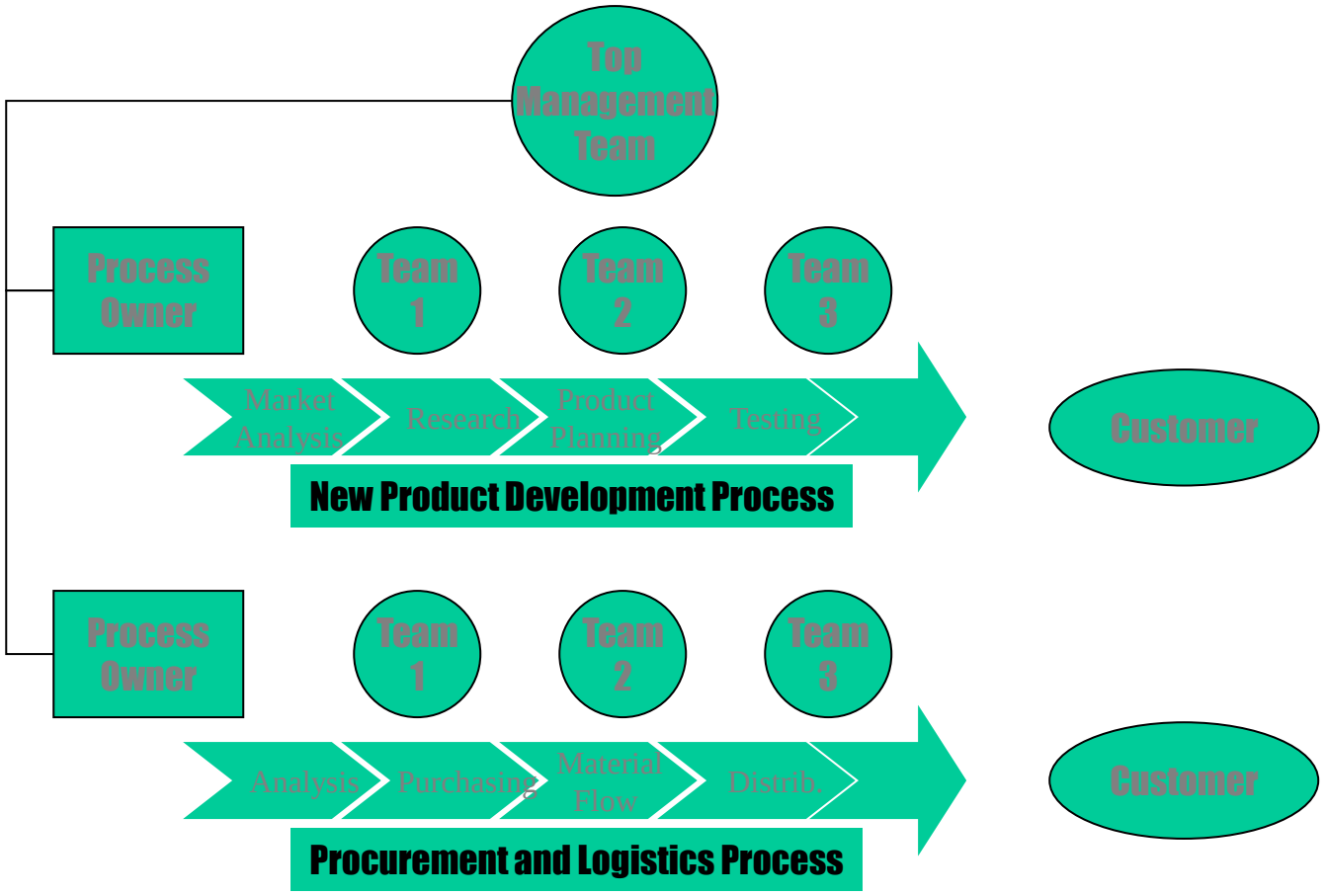


Process /Horizontal



Source: Adapted from David Nadler and Michael Tushman, *Strategic Organization Design* (Glenview, Ill.: Scott Foresman, 1988), 68.

A Horizontal Structure



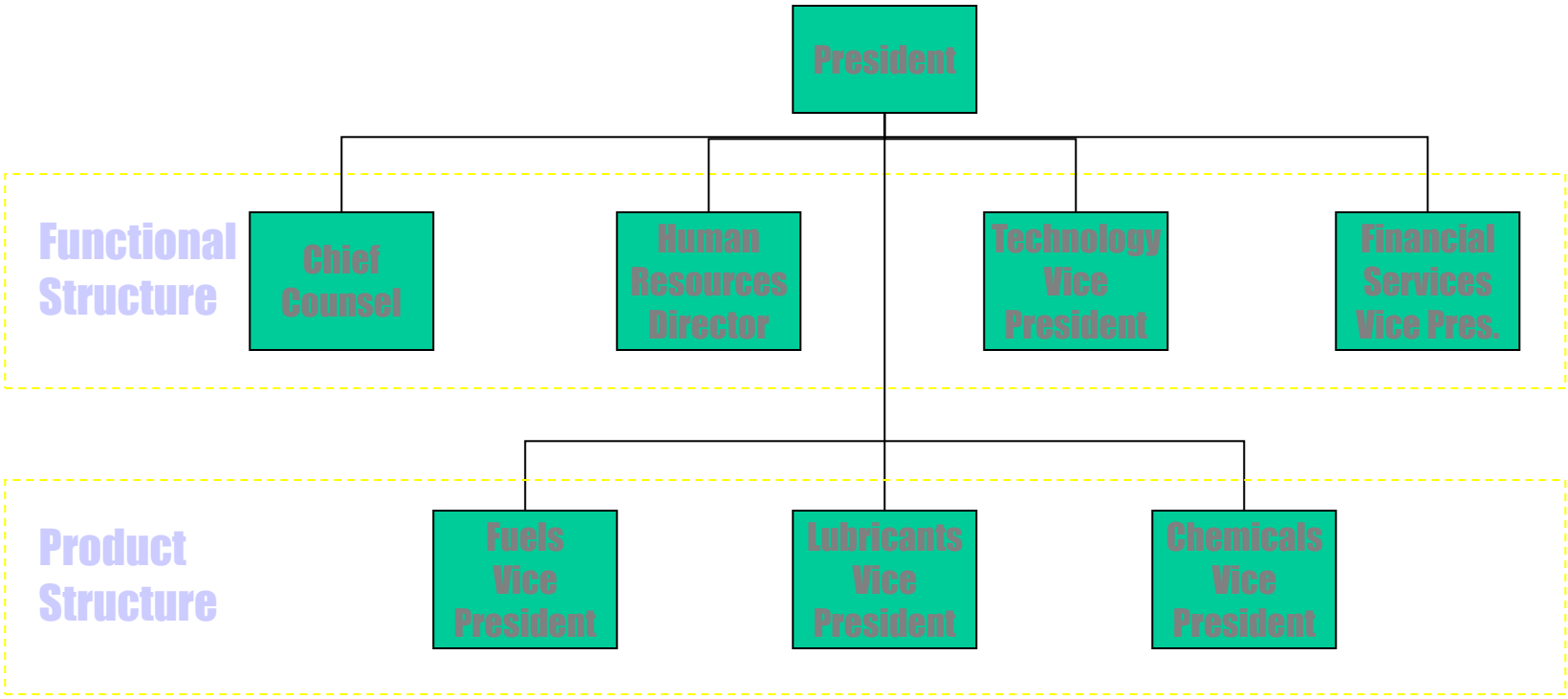
Sources: Based on Frank Ostroff, *The Horizontal Organization*, (New York: Oxford University Press, 1999); John A. Byrne, "The Horizontal Corporation," *Business Week*, December 20, 1993, 76-81; and Thomas A. Stewart, "The Search for the Organization of Tomorrow," *Fortune*, May 19, 1992, 92-98.

Horizontal Structure

- STRENGTHS:
  - Flexibility and rapid response to changes in customer needs
  - Directs the attention of everyone toward the production and delivery of value to the customer
  - Each employee has a broader view of organizational goals
  - Promotes a focus on teamwork and collaboration—common commitment to meeting objectives
  - Improves quality of life for employees by offering them the opportunity to share responsibility, make decisions, and be accountable for outcomes
- WEAKNESSES:
  - Determining core processes to organize around is difficult and time-consuming
  - Requires changes in culture, job design, management philosophy, and information and reward systems
  - Traditional managers may balk when they have to give up power and authority
  - Requires significant training of employees to work effectively in a horizontal team environment
  - Can limit in-depth skill development

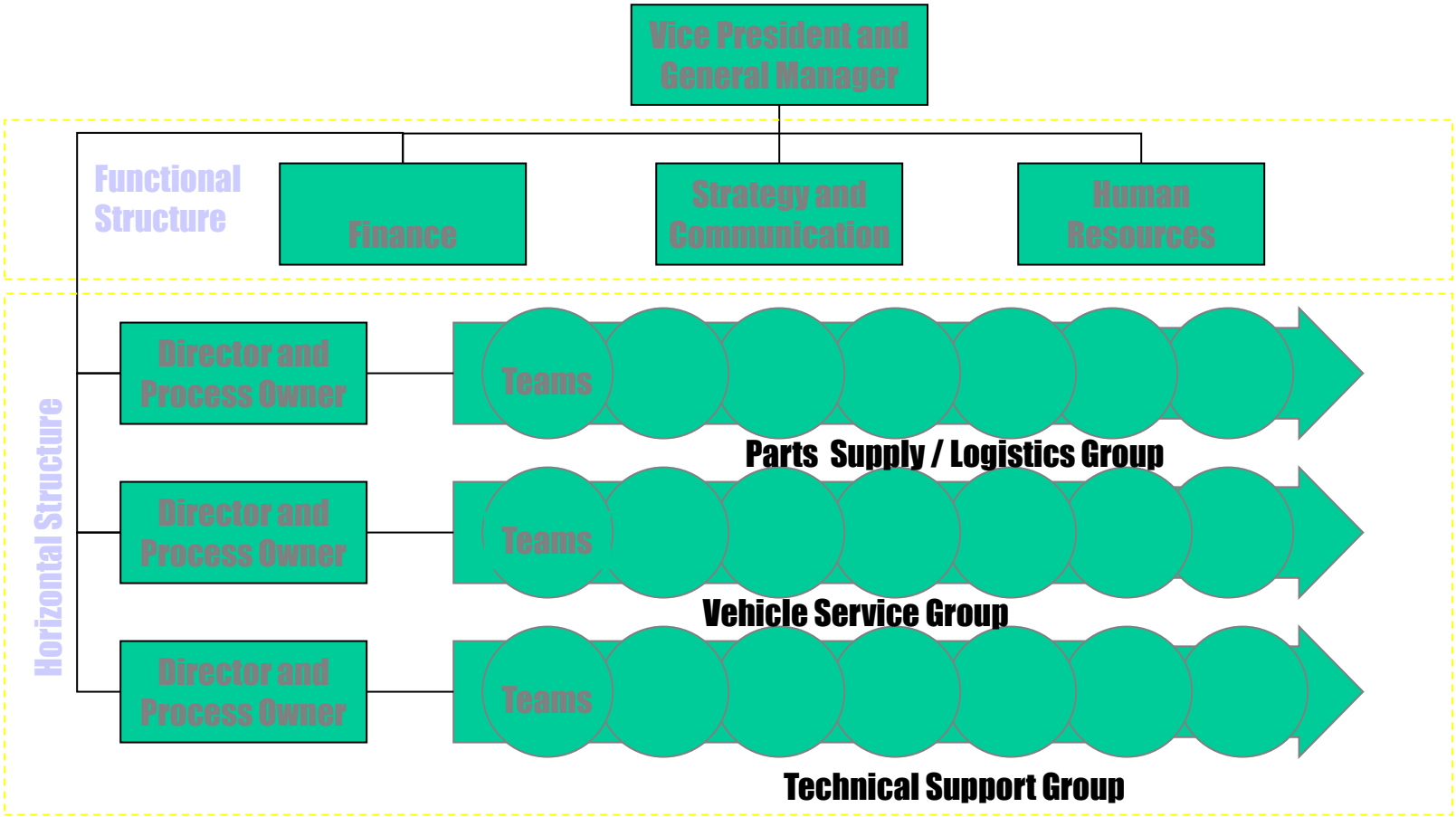
Sources: Based on Frank Ostroff, *The Horizontal Organization: What the Organization of the Future Looks Like and How It Delivers Value to Customers*, (New York: Oxford University Press, 1999); and Richard L. Daft, *Organization Theory and Design*, 6th ed., (Cincinnati, Ohio: South-Western College Publishing, 1998) 253.

Hybrid: Sun Petrochemical Products



Sources: Based on Linda S. Ackerman, "Transition Management: An In-Depth Look at Managing Complex Change," *Organizational Dynamics* (Summer 1982): 46-66; and Frank Ostroff, *The Horizontal Organization,* (New York: Oxford University Press, 1999), Fig. 2.1, 34.

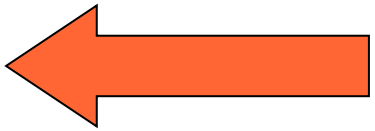
Hybrid Ford Customer Service



Sources: Based on Linda S. Ackerman, "Transition Management: An In-Depth Look at Managing Complex Change," *Organizational Dynamics* (Summer 1982): 46-66; and Frank Ostroff, *The Horizontal Organization,* (New York: Oxford University Press, 1999), Fig. 2.1, 34.

Structure and other org attributes

- Structure is influenced / influences other organizational attributes
  - Culture
  - Goals and strategy
  - Technology (and IT)
  - Environment
  - Size

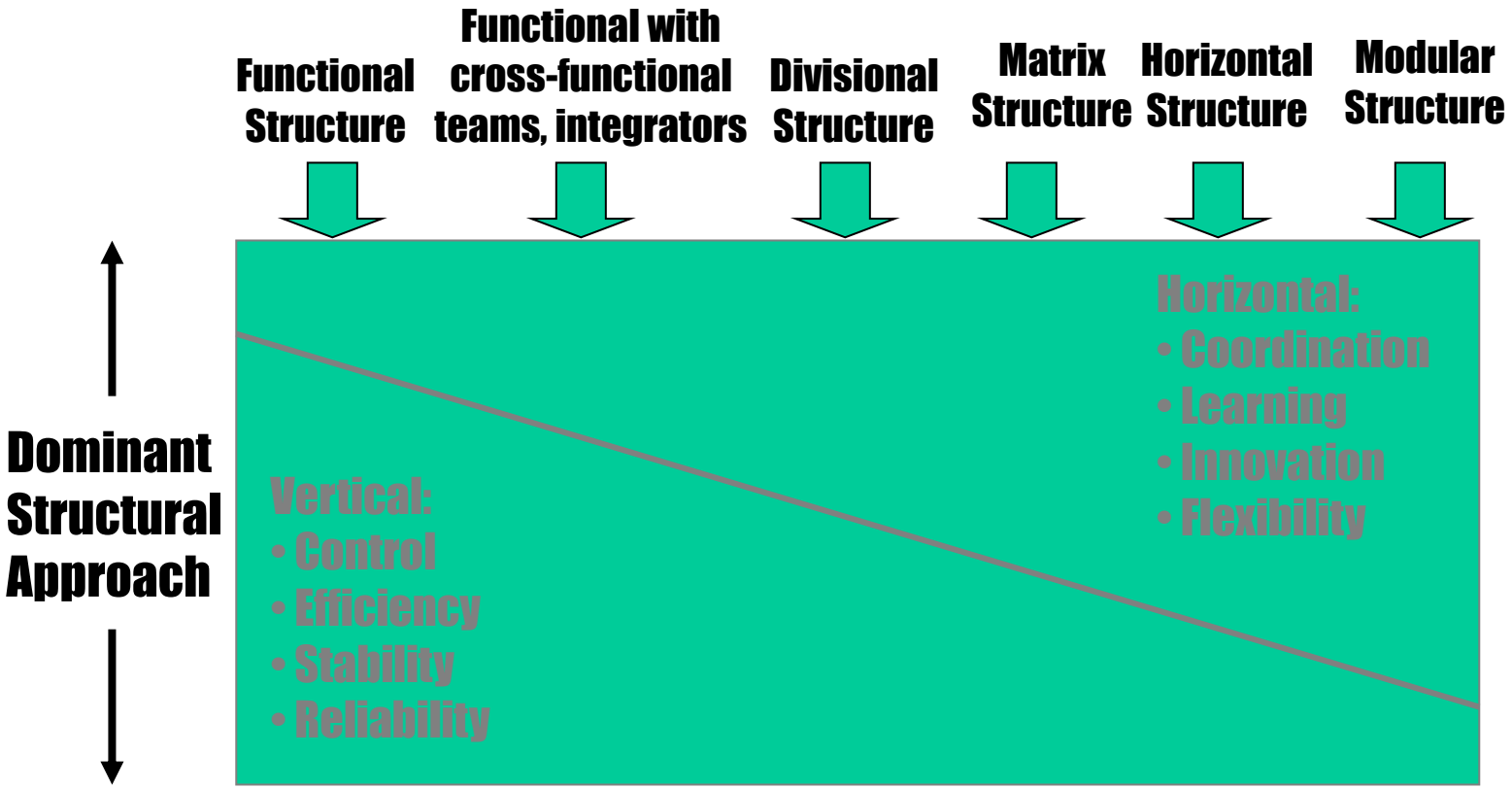


Structure and IT

- Cfr Conway's Law

- The structure of an IT system mirrors the (communication) structure of the organization that produces it
  - [Melvin Conway, 1967]

Structure to Efficiency vs. Learning



Symptoms of Structural Problems

- Decision making is delayed or lacking in quality
- The organization does not respond innovatively to a changing environment
- Too much conflict is evident