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1.133 M.Eng. Concepts of Engineering Practice  
Fall 2007

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# PROJECT MANAGEMENT 2

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October 8 2008

# WHAT IS A PROJECT ?

Organization of resources into activities

Implementation of the activities in a logical sequence

# WHAT ARE RESOURCES ?

Materials  
Equipment  
Technology  
People  
Time  
Money

# NATURE OF THE CONSTRUCTION INDUSTRY

Like Manufacturing industry – Involves the production of a physical product

Like Service industry – Does not accumulate large amount of capital  
– Many small businesses



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*Success or failure is highly dependent on the qualities of the people rather than*

*Technologies protected by patent*

*or*

*Availability of capital facilities*

# CONSTRUCTION INDUSTRY IS HIGHLY CUSTOM ORIENTED

**D**esire for Uniqueness of Product  
(not Mass Production)

**O**rganization structure is highly specialized  
and layered

**C**omplex interlocking of interests and traditions  
- Architecture



# CONSTRUCTION INDUSTRY IS HIGHLY INCENTIVE ORIENTED

Advances tend to develop from innovations or “better ideas”

Cannot be protected by laws of secrecy or patents

Ideas disseminate quickly

Benefit Competitors

Lack incentive for investment in R&D





# INTEREST GROUPS

**Owner** wants to achieve best value for their investment

**Contractors** desire to bid low enough to win but high enough to realize profit on investment

**Workers** hope to achieve better living standards and working conditions



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**Architect and Engineers** are not directly associated with the above groups

*Professional achievement more attractive*



# LIFE CYCLE OF A PROJECT

## Seven Phases

Concept and Feasibility Studies

Preliminary Engineering and Design

Detailed Engineering and Design

Procurement

Construction

Start-up and Implementation

Operation or Utilization

# 1. Concept and Feasibility Studies

Forecast Future Demand

Location

Availability of Resources

Accessibility to transportation

Political and Institutional Factors

Sociological and Economic Impact on Community

Environmental Impact

Overall Technical and Economic Feasibility

## 2. Preliminary Engineering and Design

Architectural concepts

Evaluation of technological process alternatives

Size and capacity of facility

Comparative economic studies

Reviews by regulatory bodies for compliance

Zoning regulations

Building codes

Licensing procedures

Safety standards

Environmental impact

Public Hearing

Funding cycles in Legislative and Executive Bodies

# 3. Detailed Engineering and Design

Design of Architectural Elements

Design of Structural Elements

Site Investigation

Foundation Design

Mechanical, Electrical and Plumbing Design

Preparation of Specifications and Drawings

Preparation of Contract Documents

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Design of Architectural Elements

Design of Structural Elements

Site Investigation

Foundation Design

Mechanical, Electrical and Plumbing Design

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Preparation of Contract Documents

Field Construction Methods

Cost Knowledge

# 4. Procurement

**Services**

**Equipment**

**Materials**



# 4. Procurement

Services

Equipment

Materials

Lump Sum Contract

Cost Plus Fee Contract

Negotiated Contract

## 5. Construction

*Process whereby the Designer's Plans and Specifications are converted into Physical Structures and Facilities*

**Co-ordination of all resources to complete the project**

On Schedule

Within Budget

According to Specified Standard of Quality and Performance

## 6. Start-up and Implementation

Testing of Components  
Warranty Period

## **7. Operation and Utilization**

Regular Maintenance of Facilities

# DESIGN TEAM

Architect

Interior Designer

Landscape Architect

Civil Engineer

Environmental Engineer

Electrical Engineer

Mechanical Engineer

Chemical Engineer

Geologist

Environmental Scientist

Economist

# CONSTRUCTION TEAM

General Contractor

Land Surveyor

Formwork Carpenters

Steel Fabricators

Concreters

Bricklayers

Plant and Equipment Operators

Specialist subcontractors

Suppliers

# Construction Contracts

*American Institute of Architects*

*Documents*

- A101** Standard Form of Agreement between Owner and Contractor – Stipulated Sum
- A111** Standard Form of Agreement between Owner and Contractor – Cost of the Work Plus a Fee
- A201** General Conditions of Contract for Construction
- B141** Standard form of Agreement between Owner and Architect
- A132** Performance Bond and Payment Bond

# Elements of a Construction Contract

## ARTICLES

Contract Documents

Architect

Owner

Contractor

Subcontractors

Work by Owner or by Separate Contractors

Time of Completion and Extension of Time

Progress and Final Payments

Substantial Completion

Insurance

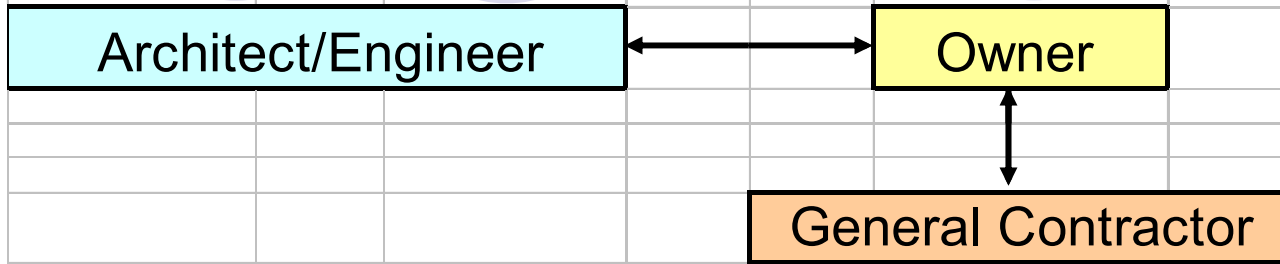
Changes in the Work

Uncovering and Correction of Work

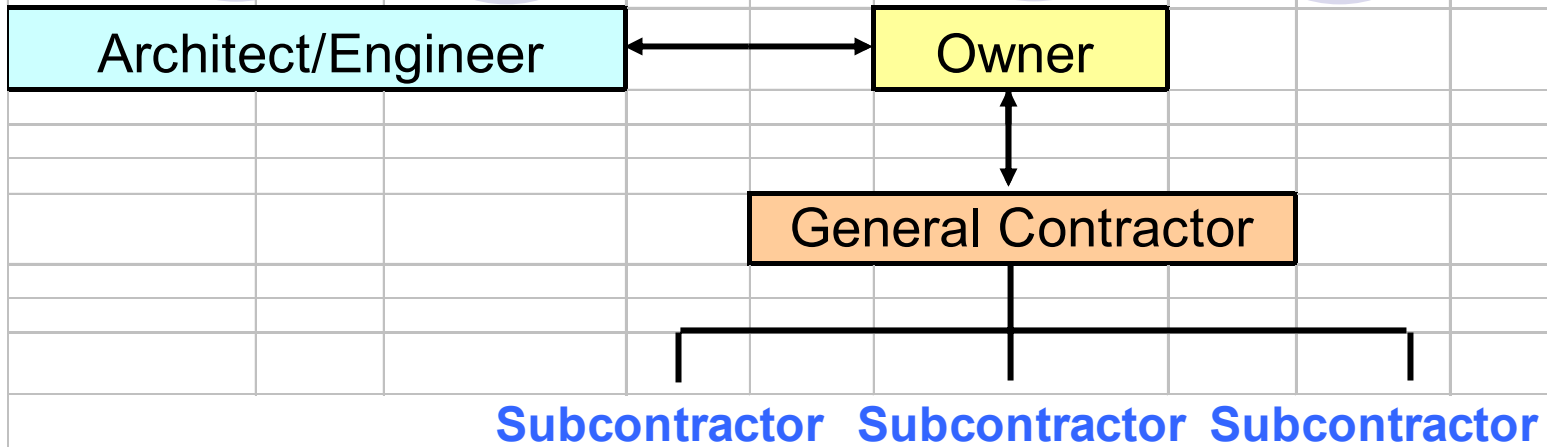
Termination of Contract



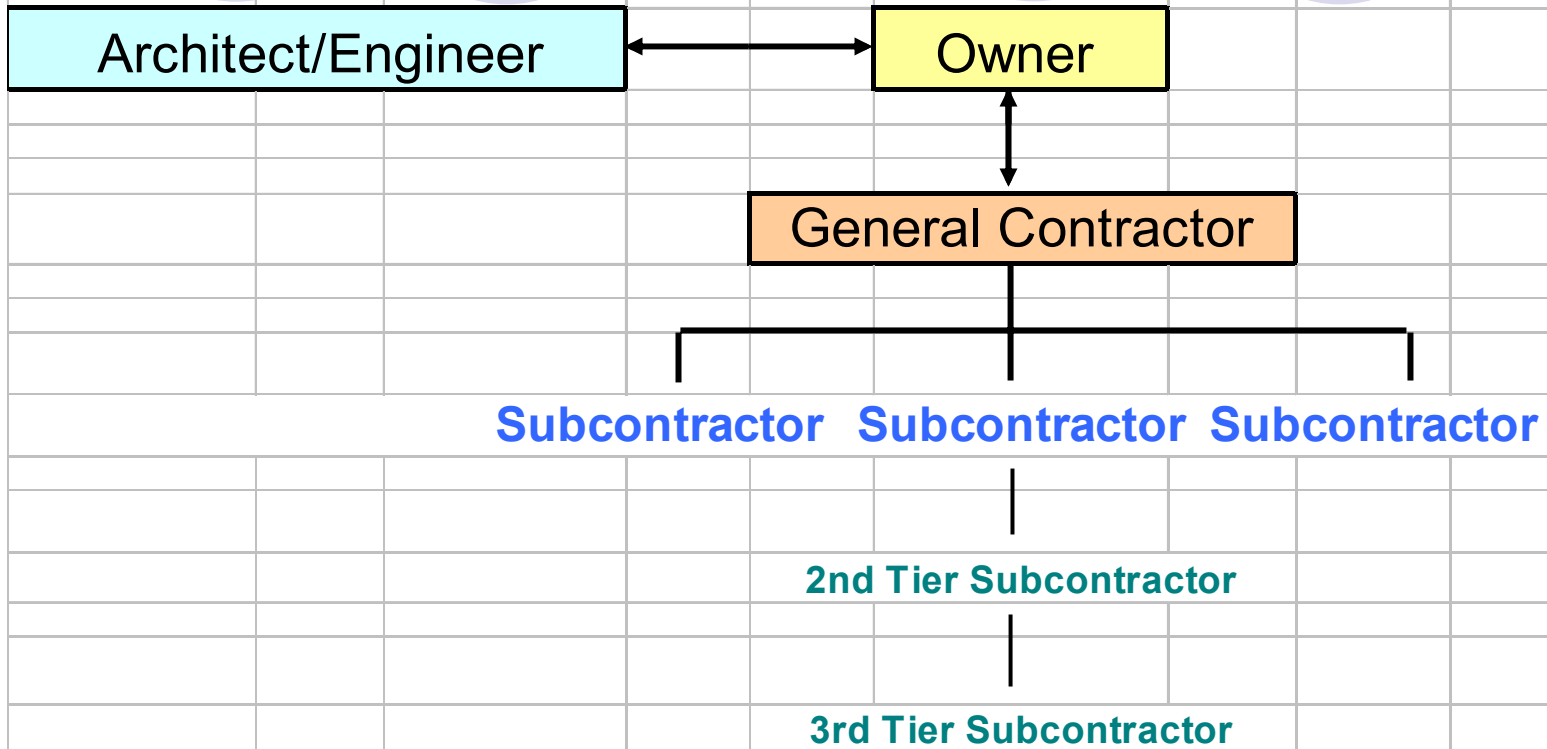
# ORGANIZATIONAL RELATIONSHIPS



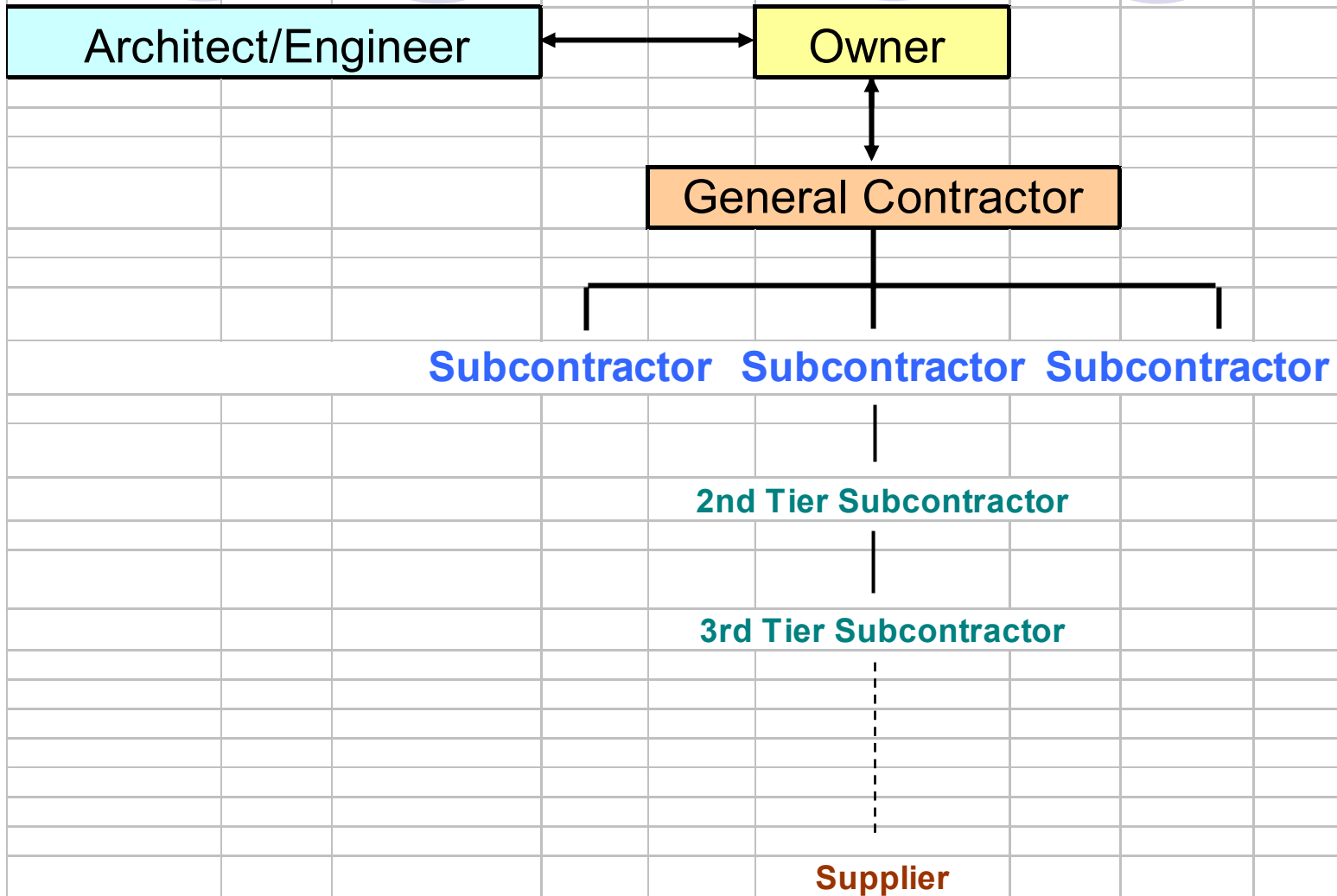
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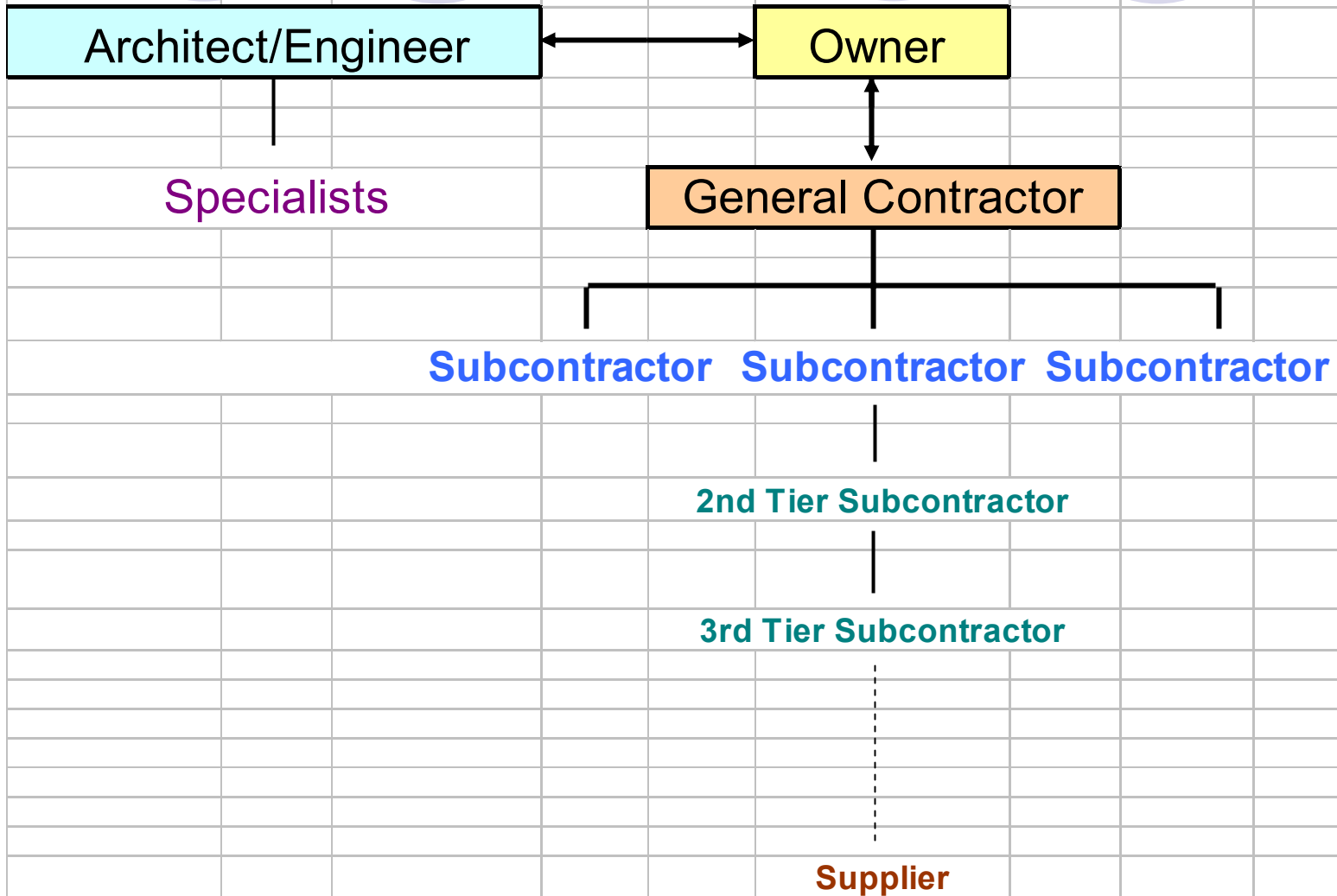
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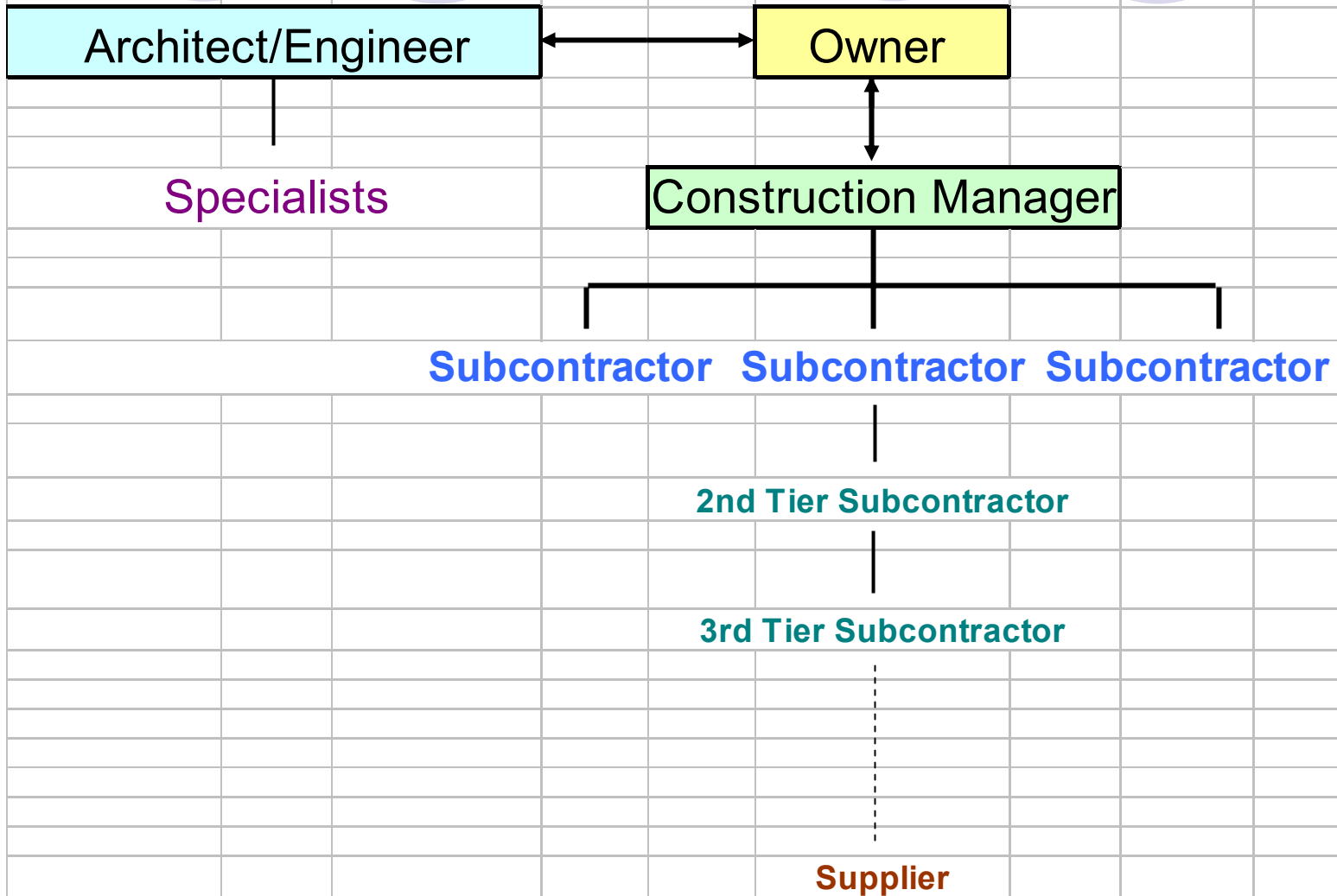
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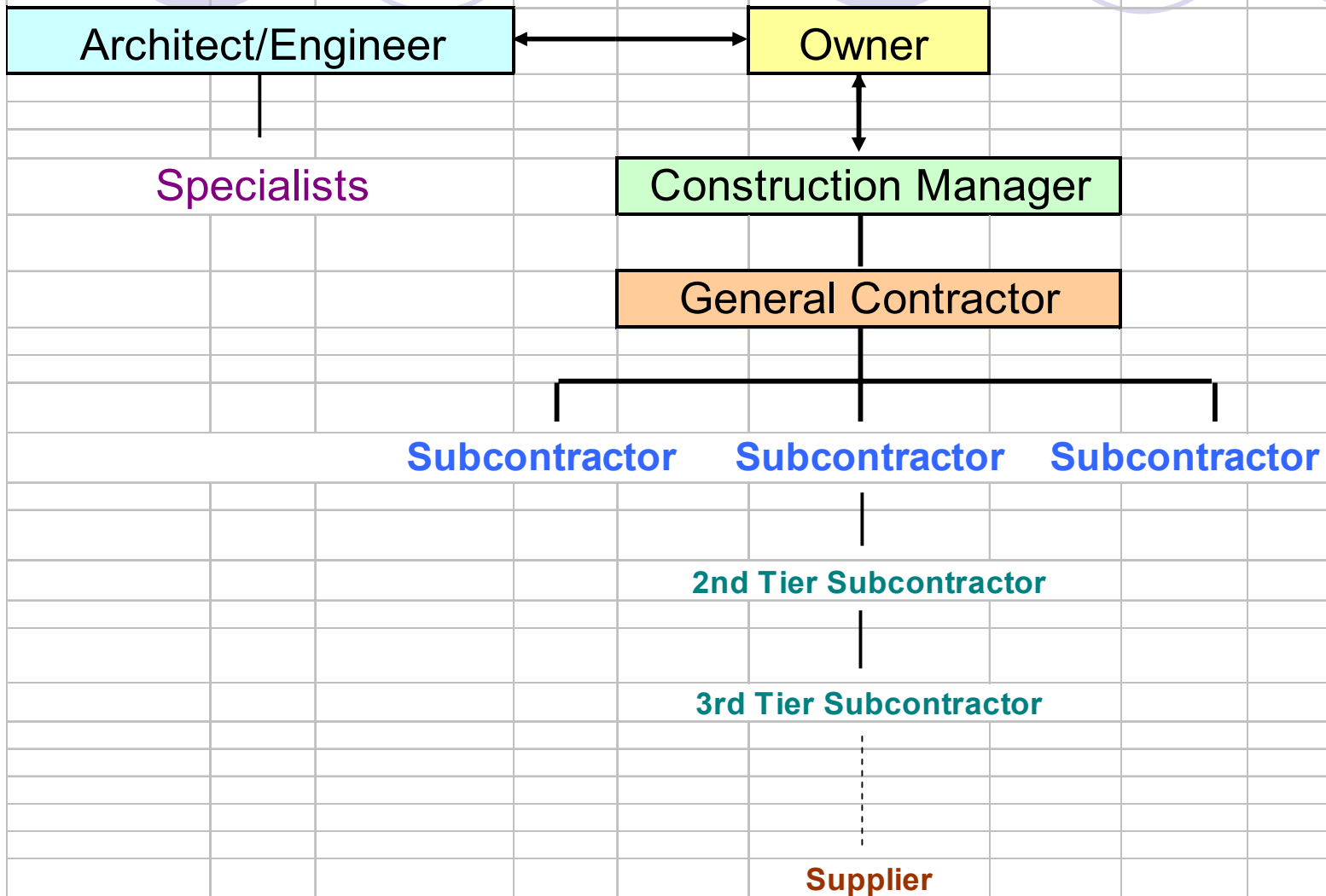
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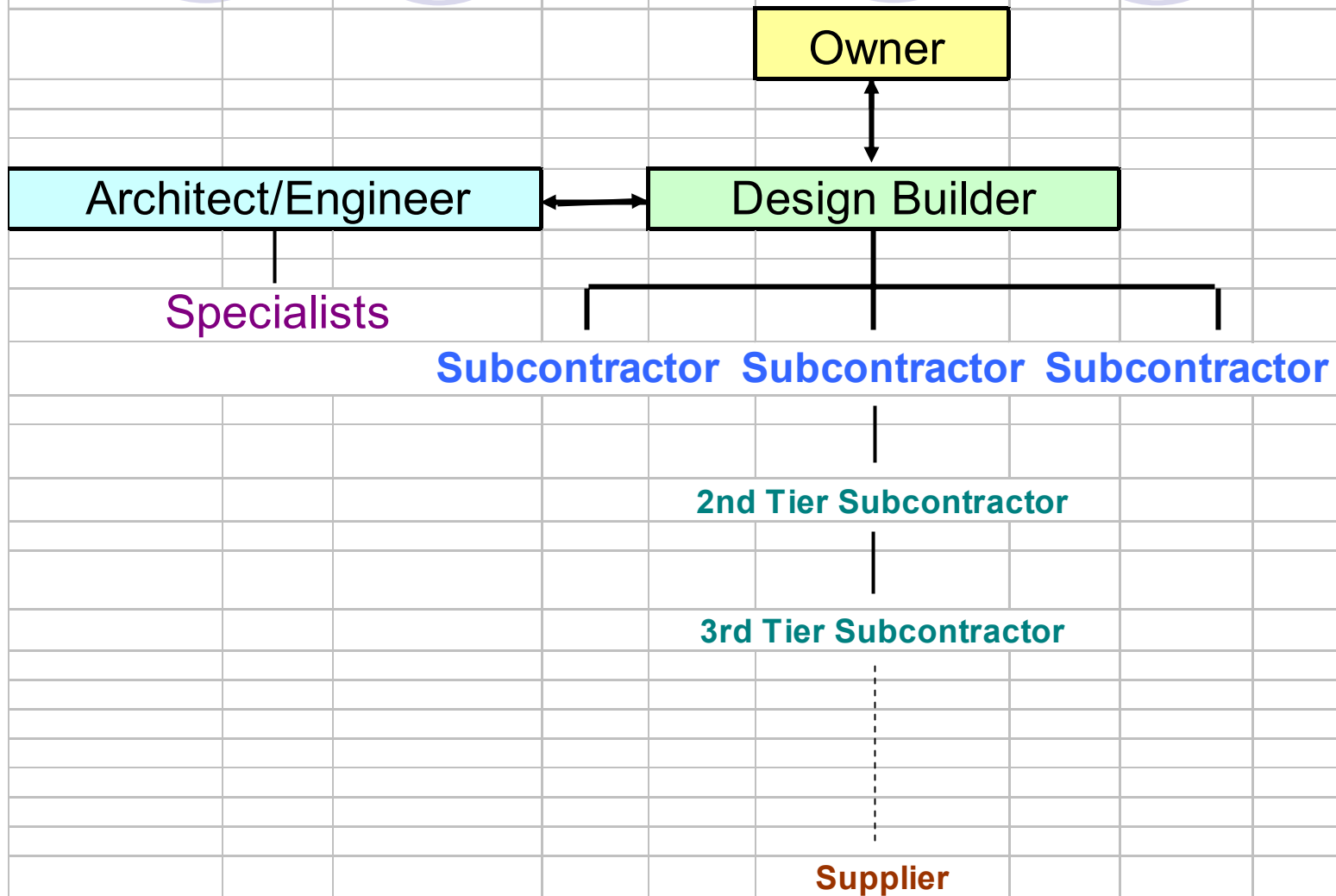
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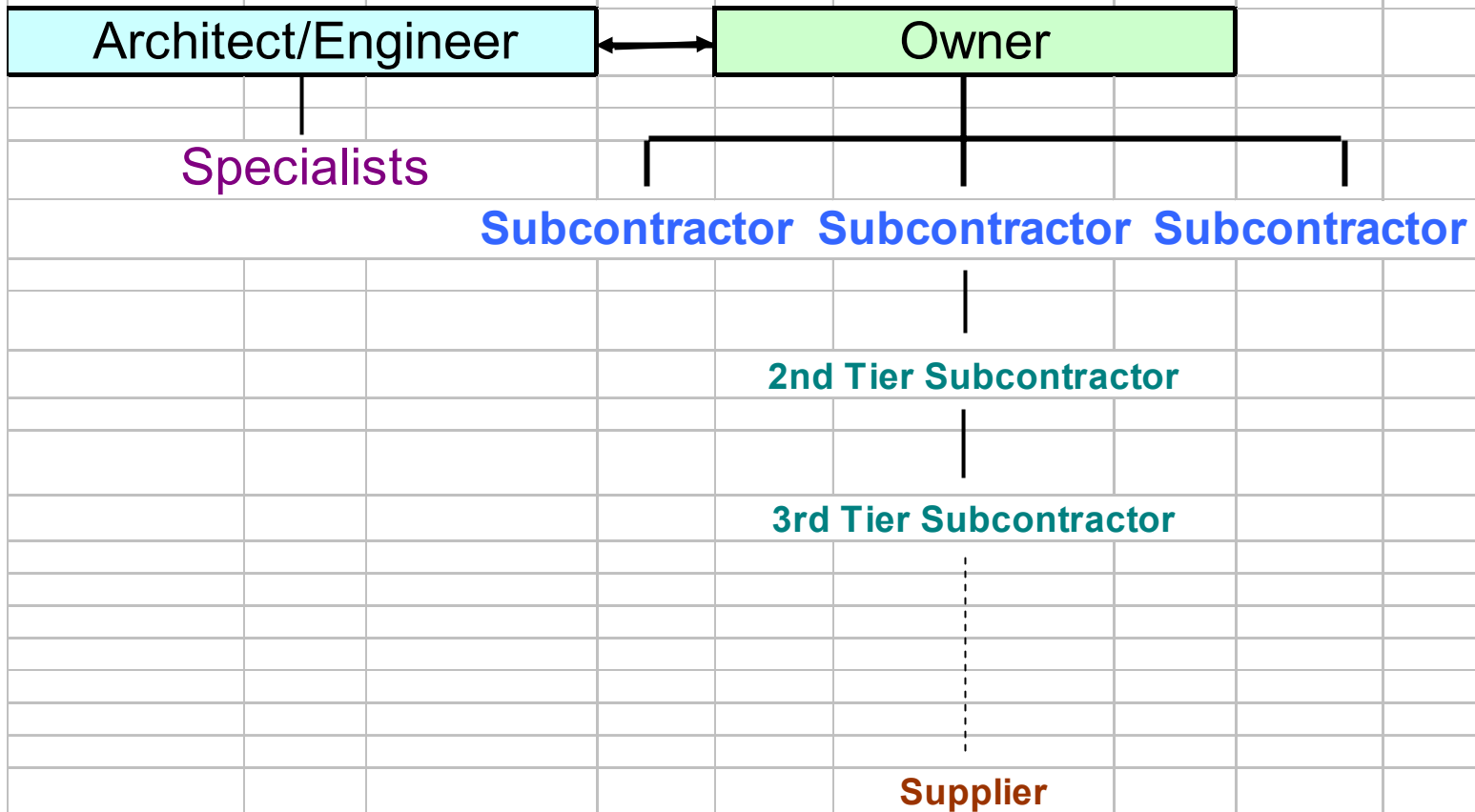


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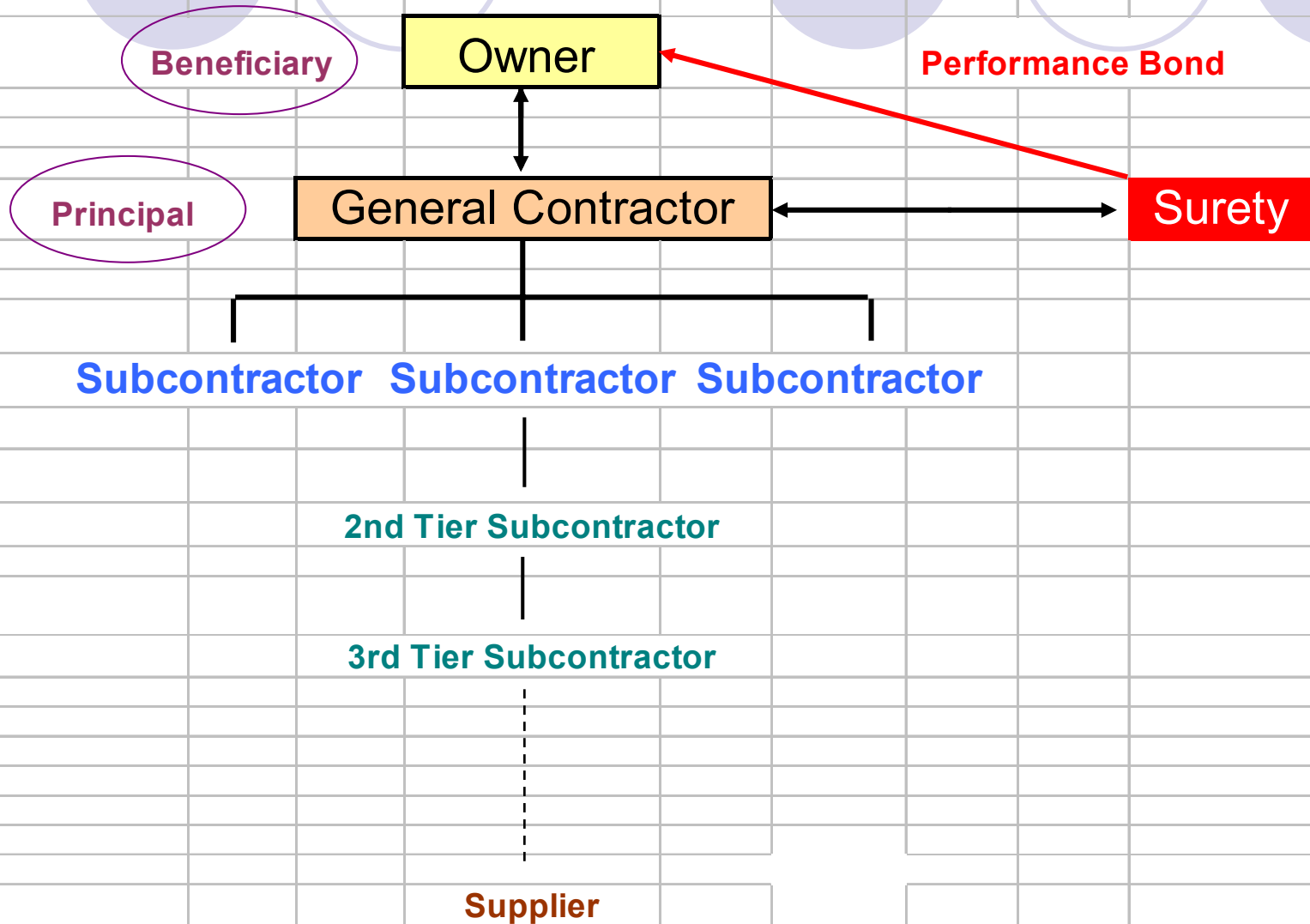


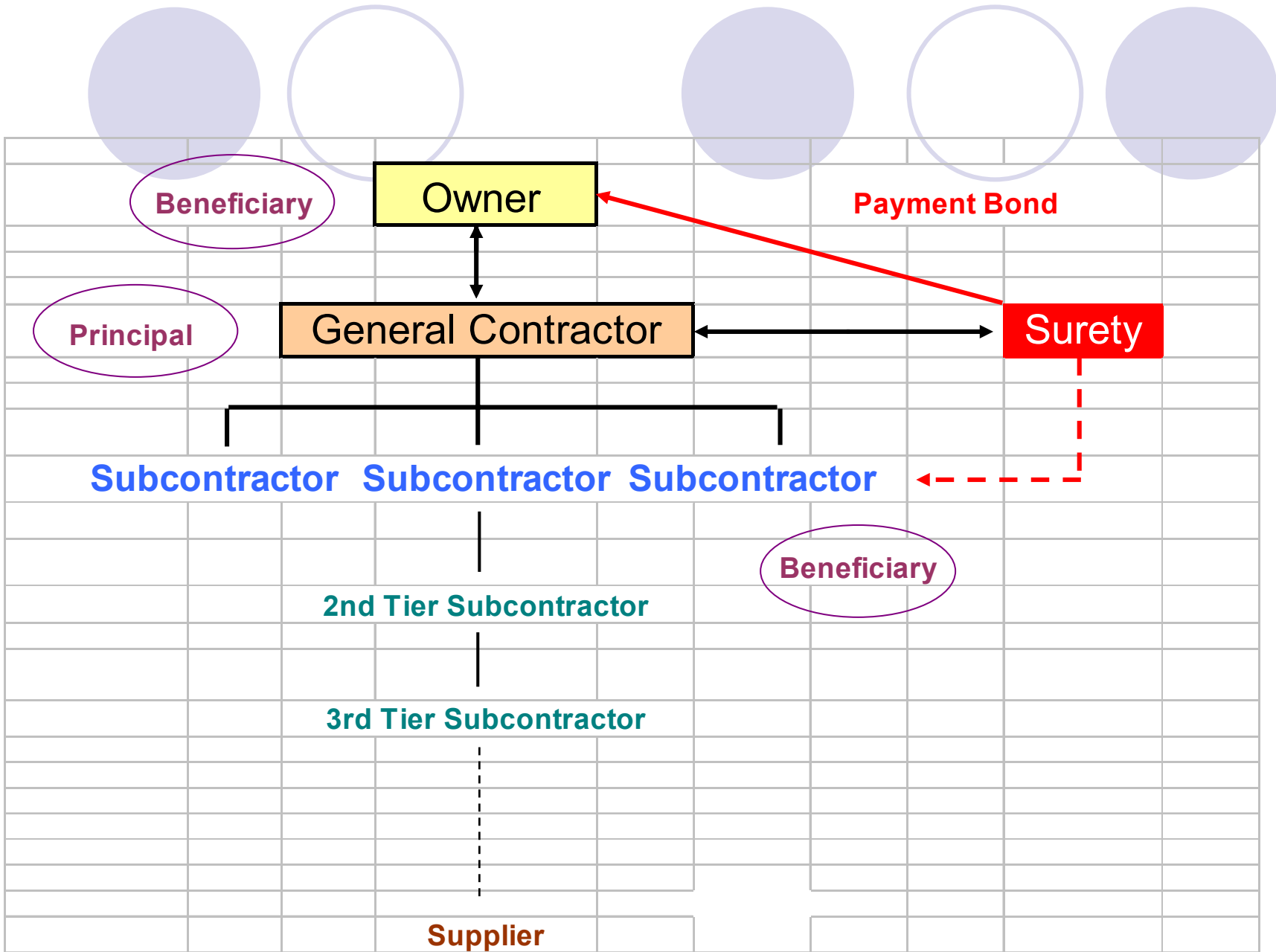


# ORGANIZATIONAL RELATIONSHIPS



# ORGANIZATIONAL RELATIONSHIPS





# INSURANCE

## Requirements under AIA A201 Contract Documents

Contractor's Liability Insurance

Owner's Liability Insurance

Property Insurance

Loss of Use Insurance

Workmen Compensation

Disability Benefits

# OWNERS RESPONSIBILITY

Make Financial Arrangements to fulfill his obligations

Furnish Accurate Contract Specifications and Drawings for the Contractor's work

Right to Stop Work

Right to Change Work

Right to Terminate Contract if Contractor Defaults

# Architect's Responsibility

Architect is the Owner's Representative

Architect is the Administrator of the Contract

Visit site at appropriate stages of construction to familiarize himself generally with the progress and quality of the Work and to determine whether Work is proceeding in accordance with Contract Documents.

Advise the Owner on Work Progress

Guard the Owner against Defects and Deficiencies in the Work of the Contractor

Reviews Contractor's Claims and Approves Amount to be paid to the Contractor

Architect is not responsible for Methods of Construction or Site Safety

# Contractor's Responsibility

Review Contract documents for Errors and Inconsistencies

Supervise and Co-ordinate all Construction Work

Provide full time Superintendent on Site

Responsible for Site Safety

Indemnify the Owner against any Claims by third parties

# Handling Disputes

Contract is signed between Owner and Contractor

Architect acts as Interpreter of the Contract between Owner and Contractor

Architect acts as Judge of the Performance of the Owner and Contractor

All disputes between Owner and Contractor shall be decided by Architect

Architect shall not show Partiality

Architect's Decision on Artistic Effects is Final

Arbitration



# **Basic Management Activities**

Scoping

Planning

Organizing

Controlling

# SCOPING

Establishing Realistic and Specific Objectives  
State in advance the Desired Results

# PLANNING

Programming  
Costing  
Scheduling

# ORGANIZING

Design of the Organization Structure

Delegation of Responsibilities

Working Relationships between Individuals and Groups

System of Communication to keep everyone informed

Provide Leadership

Feedback Loop

# CONTROLLING

Awareness of Current Status of Cost, Schedule and Quality  
Performance compared to Project Goals

Regular Inspection and Supervision

Formulate Procedures to Identify Errors in time for  
Remedial Works to be made

Manage Disputes

# Project Management - Summary

Know Your Scope of Works

Understand Your Contractual Obligations

Plan Activities in Detail

Resolve Problems Quickly

Manage Subcontractors

Manage Cash Flow

To Be A Good Project Manager



# To Be A Good Project Manager

**KNOW YOUR STUFF**

**&**

**KEEP COOL**