



Strategic Finance and Budgeting

Demystify Finance to get your projects to the next level

April 13, 2022



Session Agenda

Introduction

Think Innovation First

Why should you care

Tools you need to be aware of

Financial Planning 101

Q&A

INTRODUCTION



Rob Sarnie
Professor of Practice
at the WPI Business School

- Education
 - ✓ BS - Accounting and Finance (Bridgewater State)
 - ✓ MBA – Concentration in Computer Information Systems (Suffolk)
- Work Experience
 - ✓ Non Profit –Group Purchasing Association – 2 years
 - ✓ Manufacturing – Ionics – 6 years
 - ✓ Financial – Fidelity Investments – 23 years
 - ✓ Currently at WPI – Since Aug 2019
- Personal Life
 - ✓ I am old
 - ✓ Married to my wife Marilyn
 - ✓ 2 Children – Rachel, Jared
- Passions
 - ✓ Coaching and Mentoring the leaders of the future
 - ✓ Boston Sports
 - ✓ Disney
- FinTech groups I am collaborating with currently
 - ✓ WPI Wall Street FinTech Project Center
 - ✓ Mass FinTech Hub
 - ✓ Worcester FinTech Lab



Think Innovation First

Think Outside The Box First


- Do not think costs first
 - It will hinder your thinking
 - It will impact your creative ideas
- THINK INNOVATION FIRST
- Ask yourself all the costs questions near the end
 - But not at the end





Everything in Life is an Investment

- **Understand Your Costs Directionally:**
 - Materials
 - Support
 - Services
 - Your Time/labor
 - Implementation
 - Risk
- **Know Where Your Costs Come From:**
 - Variable costs
 - Fixed Costs
 - Overhead Costs



Know Your Stakeholders

- Who are your stakeholders?
- What do they value?
- What is the true “Need” for those stakeholders?
- What is their risk level/tolerance?

A diverse group of ten people, including men and women of various ethnicities, are standing together. Some are holding tablets or smartphones. Above them are several colorful speech bubbles in shades of red, orange, grey, blue, and green. The overall scene suggests a collaborative or communicative environment.

Quick Poll Of Your Stakeholders

Cost of Risk

- What are the Risks?
- Who is impacted?
- How are they impacted?
- What are the costs of those impacts?
- Is there a ripple effect of these impacts?

**FACE MASK OR
FACE COVERING**



**MUST BE
WORN
TO ENTER**

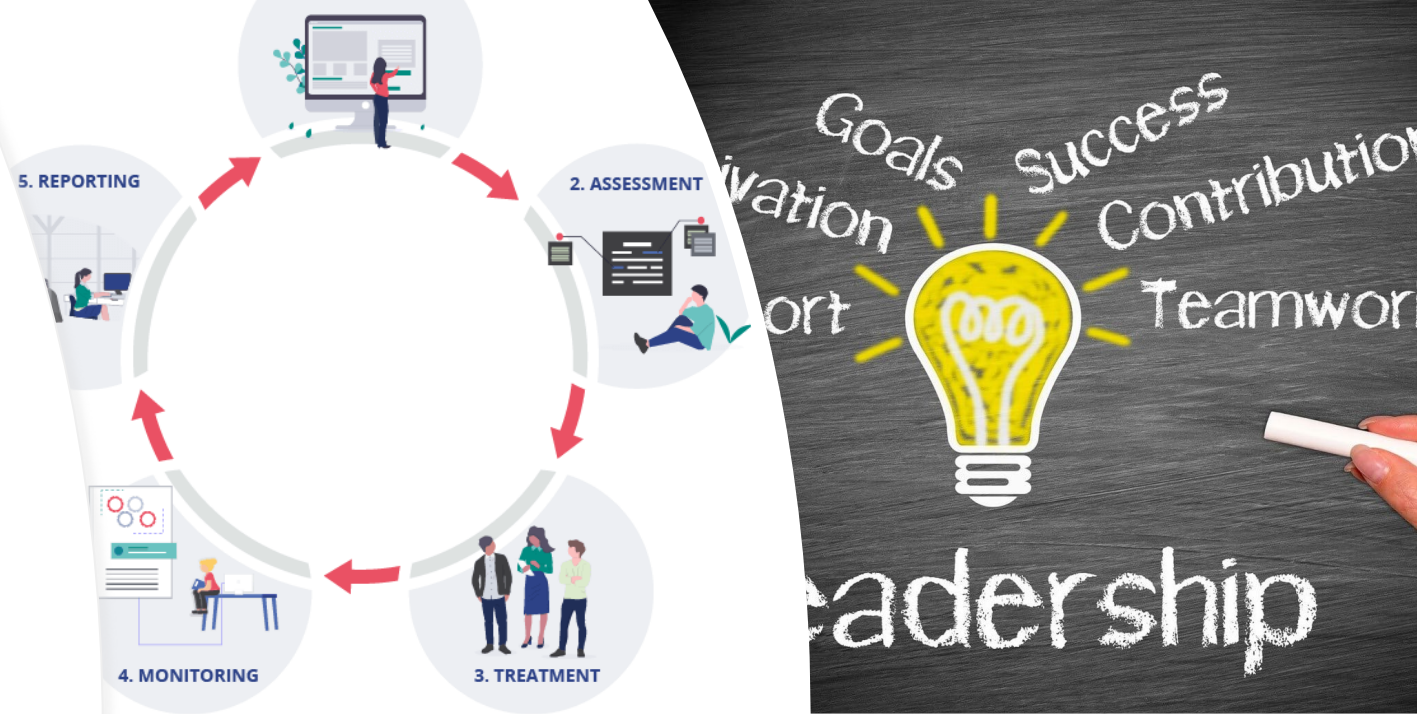


Sustainability Model

- Who benefits?
- Who pays?
- How do they benefit?
- How do they pay?
- What are the benefits?
- What are the incentives?
- Will this work forever?

What is Risk Management ?

- Risk Management is everywhere. It is in:
 - Finance (Risk vs Return?)
 - Business (Do I delivery X or Y?)
 - Life (Do I where a mask or not?)
 - TUR (Do I invest in reducing Toxic X?)
- Risk Management is a Process
- Risk Management is Leadership



50.46A: Economic Evaluation of Potential TUR Techniques

1. Toxics users shall evaluate the economic feasibility of each TUR option identified as technically feasible ***as compared to the current operations involving the toxic***. The following items must be considered if relevant:
 - a) indirect and direct **labor and materials costs**;
 - b) purchase or manufacturing **cost of the toxic and its alternative** chemical;
 - c) **capital and equipment costs**;
 - d) **storage, accumulation, treatment, disposal, and handling costs** associated with toxics and byproducts;
 - e) costs associated with **activities required to comply with local, state, or federal laws or regulations**, (e.g., fees, taxes, and costs associated with treatment, disposal, reporting and labeling);
 - f) **worker health or safety costs** associated with the toxic and its alternative chemical (e.g., protective equipment, and lost employee time due to accidents or routine exposure to the toxic);
 - g) **insurance**;
 - h) **potential liability costs**; and
 - i) **loss of community goodwill and product sales lost** to competing non-toxic products.



Why should you
care

The End Game



**Be a Trusted Advisor, Consultant, and Leader by
Turning Financial Data into Knowledge, into Action, into Results**

Many Audiences Many Needs



CEO



**CIO/
CRO**



CFO



**Business
Partner**



**Product/
Project
Managers**



Workers



**Finance
Support**



Customers



**Your
Team**



Manager

Balance Sheet

$$\text{Assets} = \text{Liabilities} + \text{Owners' Equity}$$

Current Assets

Cash

Inventory

A/R

Current Liabilities

A/P

Accruals

S-T Debt

Owners' Equity

Common Stock

Capital in Excess
of Par

Retained Earnings

Fixed Assets

Land

Plant

Equipment

Less:

Depreciation

Long-term Liabilities

Bonds

L-T Bank Debt

Mortgages

Preferred Stock

The Balance Sheet
is like Big Foot
to most people in
a company



Income Statement

$$\text{Revenues} - \text{Expenses} = \text{Net Income}$$

- Sales
- Investment Income
- Gains*
- Interest Received*
- Dividends Received*
- COGS
- Salaries
- Depreciation Exp.
- Taxes
- Other Expenses
- Interest Paid

$$\text{Revenues} - \text{Expenses} = \text{Net Income}$$

Dividends

Δ Retained Earnings

The Income Statement Gets All The Love



Statement of Cash Flows

$$\text{Cash Inflow} - \text{Cash Outflow} = \text{Change in Cash}$$

From Operations:

+Cash Sales
+Depreciation Exp.
+Collection of A/R
+Decrease inventory

-Payments to Suppliers
-Salaries
-Increase A/R
-Decrease Payables
-Decrease Accruals

From Investing:

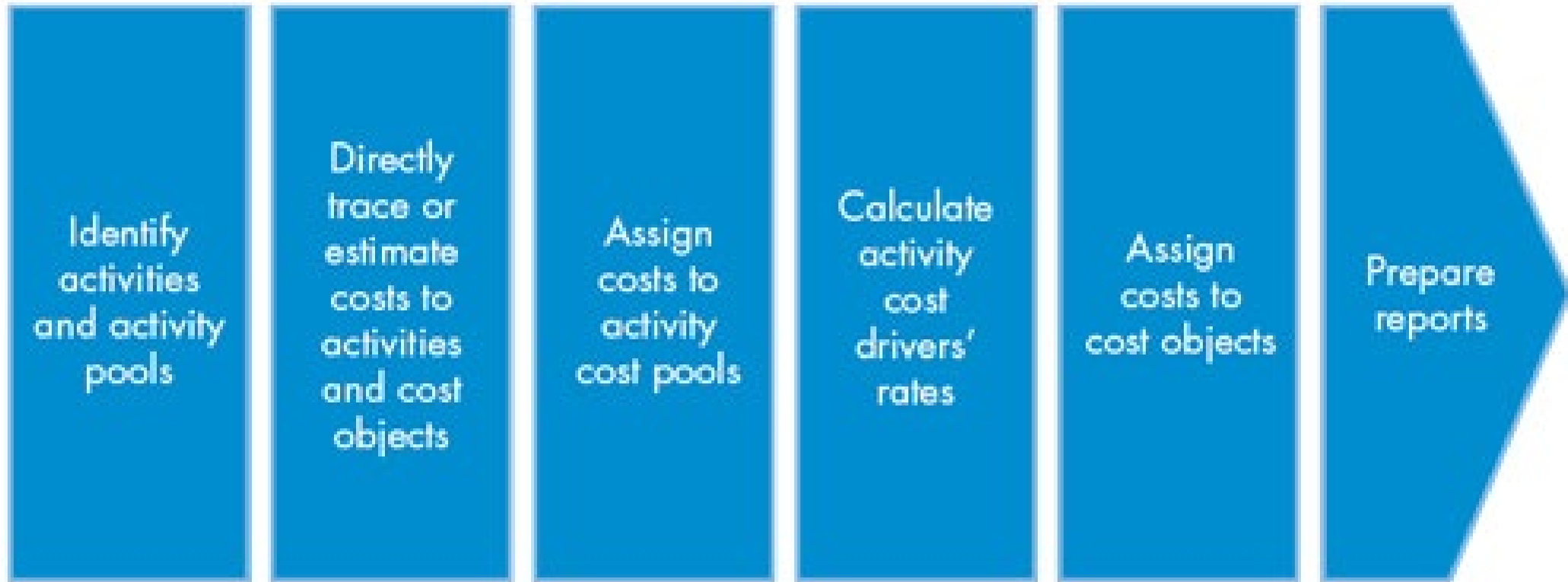
+Sale of fixed assets

-Purchase of fixed assets
-Purchase of other firms

From Financing:

+Sale of stock
+Issue of LT debt
or notes payable

-Buyback stock
-Repay long-term debt
-Pay dividends
-Pay interest



ABC Activity Based Costing



The Power of ABC

Cash Inflow		-	Cash Outflow		=	Change in Cash
From Operations:						
+Cash Sales				-Payments to Suppliers		
+Depreciation Exp.				-Salaries		
+Collection of A/R				-Increase A/R		
+Decrease inventory				-Decrease Payables		
				-Decrease Accruals		
From Investing:						
+Sale of fixed assets				-Purchase of fixed assets		
				-Purchase of other firms		

Quick Poll On Forecasting & ABC for a Toxic Use Reduction Cash Flow



Tools you need to
be Aware of

Determination of Risk/Rates

$$k = k^* + IRP + DRP + MRP + IRP + SSP$$



k	=	the nominal, or observed rate on security
k^*	=	real rate of interest
IRP	=	Inflation Risk Premium
DRP	=	Default Risk Premium
MRP	=	Maturity Risk Premium
IRP	=	Illiquidity Risk Premium
SSP	=	Safe Storage Premium

Additional Potential Risk Premiums for your company

- Reputation Risks
- Operation Risks
- Implementation Risks
- Culture Risks
- Strategy Risks
- Innovation Risks
- Other Risks



What is WACC - Weighted Average Cost of Capital

$$WACC = \frac{E}{D + E} (r_e) + \frac{D}{D + E} (r_d)(1 - t)$$

Where:

E = market value of equity

D = market value of debt

r_e = cost of equity

r_d = cost of debt

t = corporate tax rate

Weighted Average Cost of Capital



Capital Budgeting

- Capital budgeting is the process of evaluating proposed investment projects for a firm.
- Managers must determine which projects are acceptable and must rank mutually exclusive projects by order of desirability to the firm.
- 4 ways to Accept or Reject a Project Funding Decision
 1. Payback Period / Return on Investment (ROI)
 - years to recoup the initial investment
 2. Net Present Value (NPV)
 - change in value of firm if project is undertaken
 3. Internal Rate of Return (IRR)
 - projected % rate of return project will earn
 4. Modified Internal Rate of Return (MIRR)
 - projected % rate of return while taking into account your cost of capital



Time Value of Money

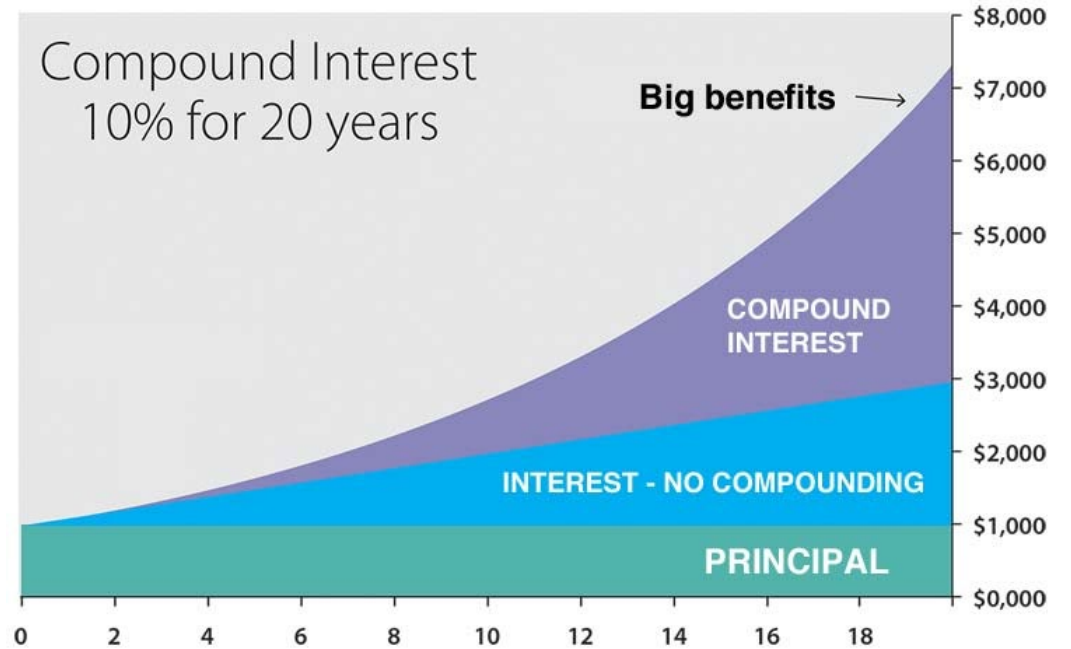
Simple Interest
\$10,000
5% per year
Over 40 years

\$30,000

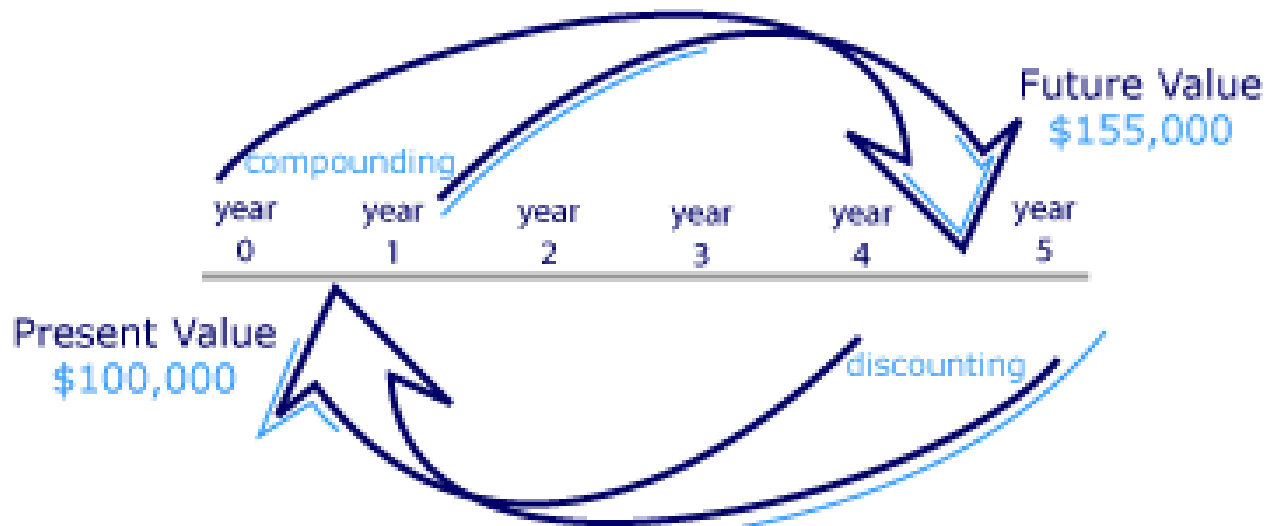
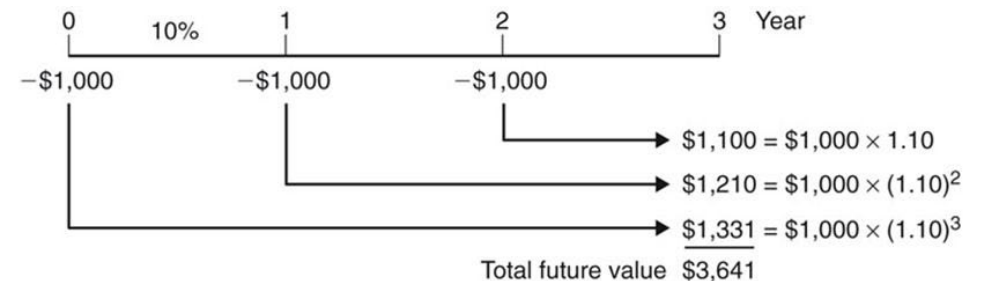


Compound Interest
\$10,000
5% per year
Over 40 years

\$70,399



Future Value of Three Cash Flows



Return on Investment (ROI)

<https://www.wikihow.com/Calculate-NPV>

ROI
RETURN ON INVESTMENT

WHAT
MEASURES AN INVESTMENT'S PROFITABILITY

$$\frac{\text{PROFIT}}{\text{AMOUNT INVESTED}} = \text{ROI}$$

WHAT IT MEANS

POSITIVE = MADE MONEY
VERY PROFITABLE!

0 = BROKE EVEN

NEGATIVE = LOST MONEY

HOW USED
MEASURE RETURN ON

- INVESTMENTS
- MARKETING
- BUSINESS DECISIONS
- EDUCATION
- SOCIAL GOOD
- REAL ESTATE

Napkin Finance

1. Determine your initial investment.

C - cost

\$100

wikiHow to Calculate NPV

2. Determine a time period to analyze

T - time

3 years

Sunday	Tuesday	Wednesday	Thursday	Friday	Saturday
	2	3	4	5	6
9	10	11	12	13	
14	15	16	17	18	19
20	21	22	23	24	25
26	27	28	29	30	31

wikiHow to Calculate NPV

3. Estimate your cash inflow for each time period.

Year One = \$50

Year Two = \$40

Year Three = \$30

wikiHow to Calculate NPV

4. Calculate profit over the time frame

$$\frac{\text{Ending value of investment} - \text{Amount you invested}}{\text{Amount you invested}}$$

$$\frac{(\$50 + \$40 + \$30) - \$100}{\$100}$$

$$\frac{\$20}{\$100}$$

5. Calculate ROI

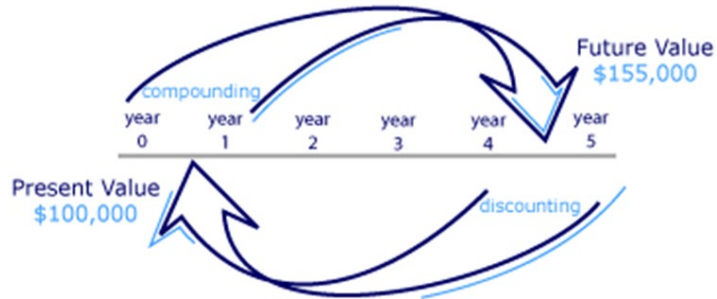
= 20%

The payback period is 5 years

Net Present Value (NPV)

<https://www.wikihow.com/Calculate-NPV>

The time value of money



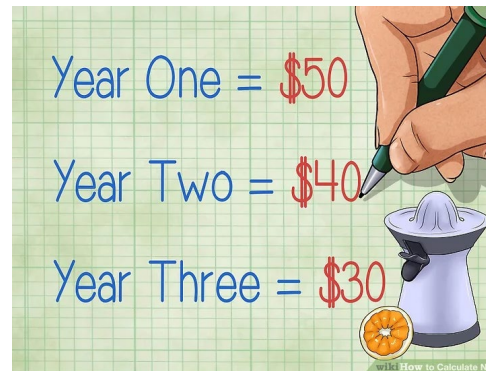
1. Determine your initial investment.



2. Determine a time period to analyze



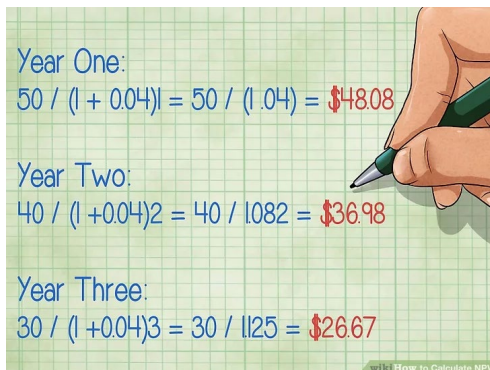
3. Estimate your cash inflow for each time period.



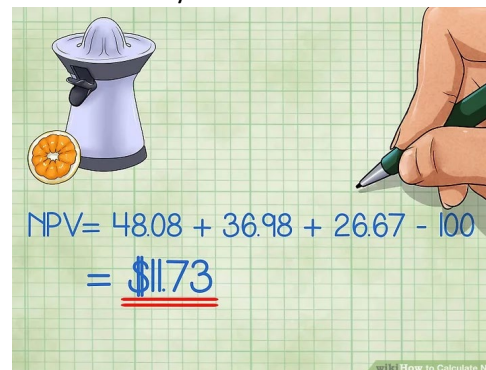
4. Determine the appropriate discount rate.



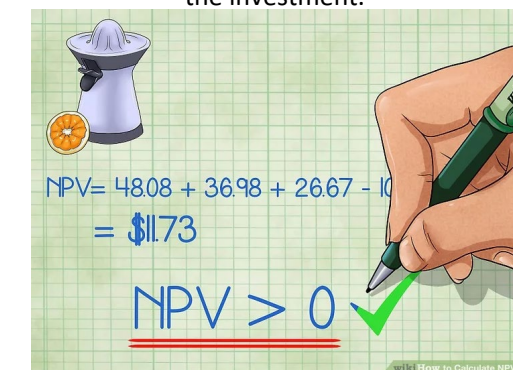
5. Discount your cash inflows.

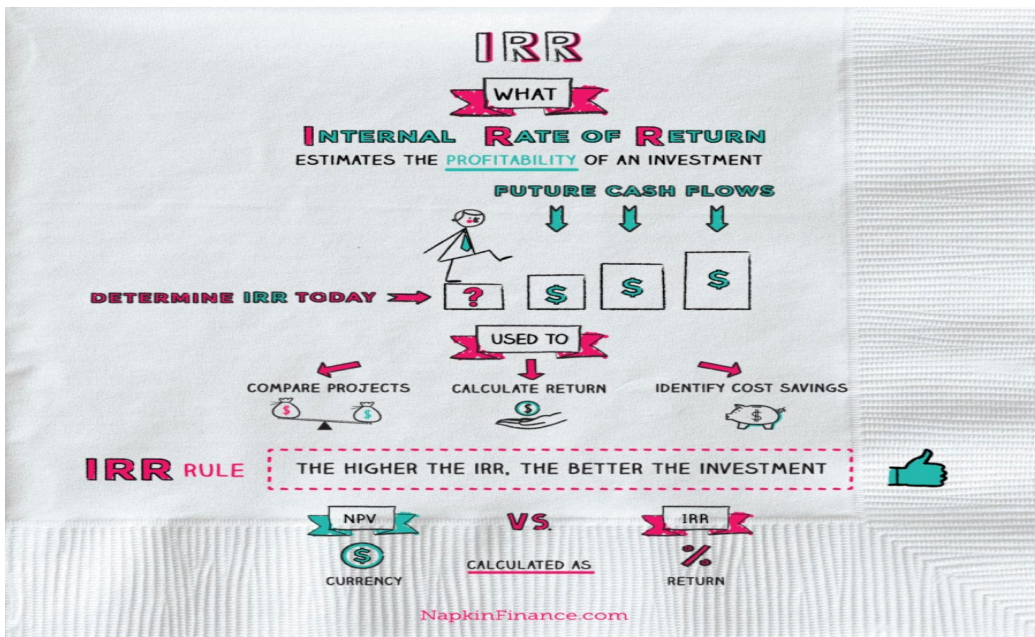


6. Sum your discounted cash flows and subtract your initial investment.



7. Determine whether or not to make the investment.





	2017A	2018P	2019P	2020P	2021P	2022P
Initial Outlay	(250,000)					
After-Tax Cash Flow		100,000	150,000	200,000	250,000	300,000
WACC	Formula Used: =E\$6/(1+\$C\$9)^1					
57%	=F\$6/(1+\$C\$9)^2					
Risk Free Rate	=G\$6/(1+\$C\$9)^3					
2%	=H\$6/(1+\$C\$9)^4					
	=I\$6/(1+\$C\$9)^5					
SUM of PV	250,000	Formula				
Less: Initial Outlay	(250,000)	=SUM(E9:I9)				
NPV:	0	=D5				
		Formula				
		=SUM(E12:E13)				
				IRR: 57%	Formula: =IRR(D5:I6)	
				MIRR: 33%	Formula: =MIRR(D5:I6,\$C\$9,\$C\$11)	

[Great explanation of IRR and MIRR on Investopedia with video](#)

IRR takes the forecasted cash flows minus the initial cost. The IRR function in Excel will calculate the IRR for you

In order to calculate the IRR by hand, you'll need to estimate the rate of return that will set the net present value to zero. As you perform this calculation, you'll need to adjust this estimation until you get as close to zero as you can.

MIRR (Modified Internal Rate of Return) expands on IRR by taking into account your cost of capital and the risk-free rate. Let's assume 2% for the risk-free rate and 12% for our cost of capital.



→ $IRR(-100+50+40+30) = 10.7\%$

The values of cash flows would be formatted as a range of cells like B10:B13



→ $MIRR((-100+50+40+30),0.2,.12) = 11.2\%$

The values of cash flows would be formatted as a range of cells like B10:B13



Quick Poll on your Company's Decision Process

Statement of Cash Flows

Cash Inflow - **Cash Outflow** = **Change in Cash**

From Operations:

Cash Sales	-Payments to Suppliers
Depreciation Exp.	-Salaries
Collection of A/R	-Increase A/R
Decrease inventory	-Decrease Payables
	-Decrease Accruals

From Investing:

+Sale of fixed assets	-Purchase of fixed assets
	-Purchase of other firms

From Financing:

Sale of stock	-Buyback stock
Issue of LT debt	-Repay long-term debt
Payables payable	-Pay dividends
	-Pay interest

Gallagher 8e: © Textbook Media Press



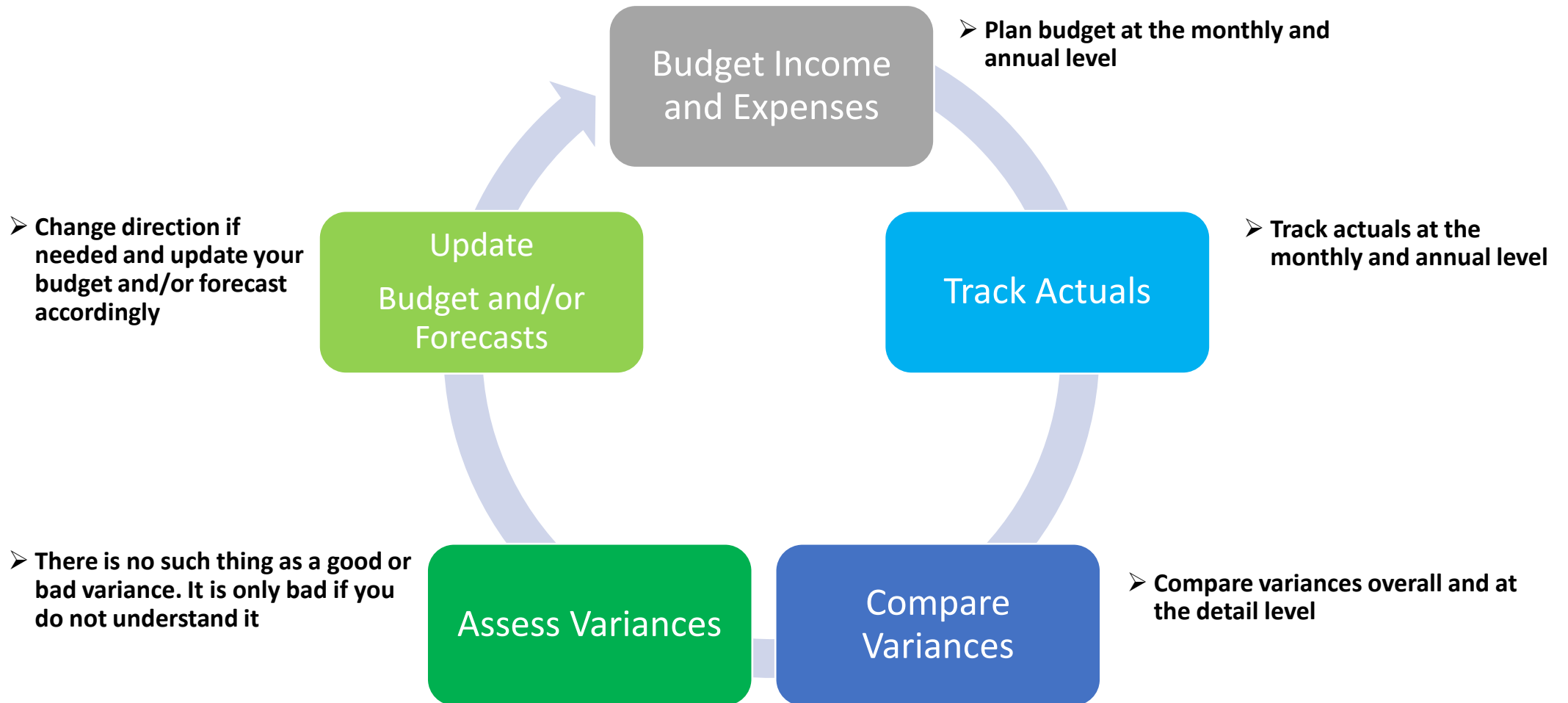
Estimating Incremental Cash Flows

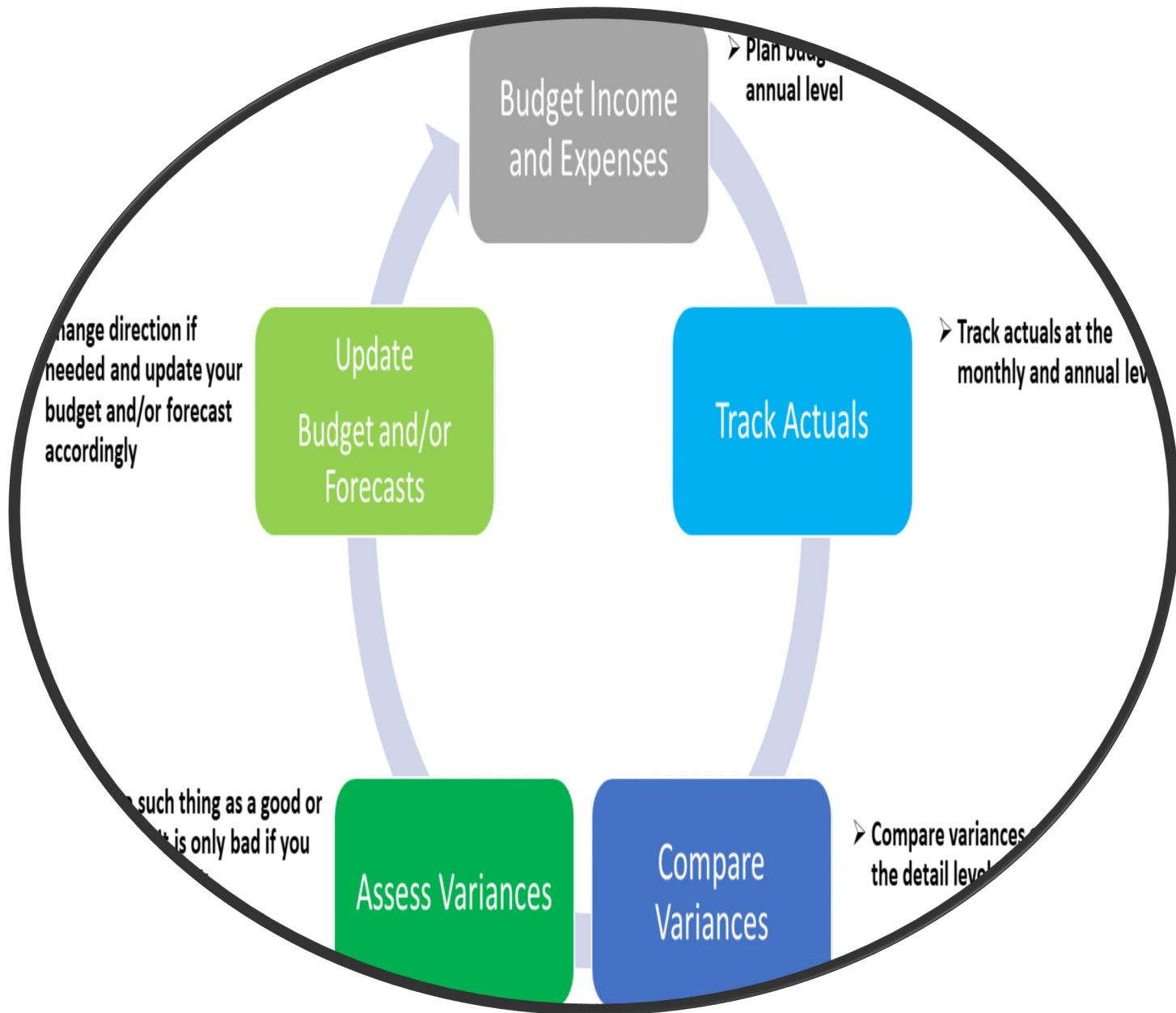
- Same fundamental approaches we learned when doing time value of money and NPV of a project
- When a project is complete, you need to estimate/calculate what cash flows will it generate during its life?
 - Generate more revenue
 - Generate cost reductions
 - Maybe create more costs
 - Account for taxes and Depreciation
- Then discount those cash flows to present value.



Financial Planning 101

Financial Plans: Budgets -> Forecasts -> Actuals





Quick Poll on Budgets and Forecasts

1

Understand the strategic business goals and needs

- ✓ "Seek to understand before you can be understood" - Covey
- ✓ These goals will be your NorthStar
- ✓ Know why these goals are important
- ✓ Know the priorities





2

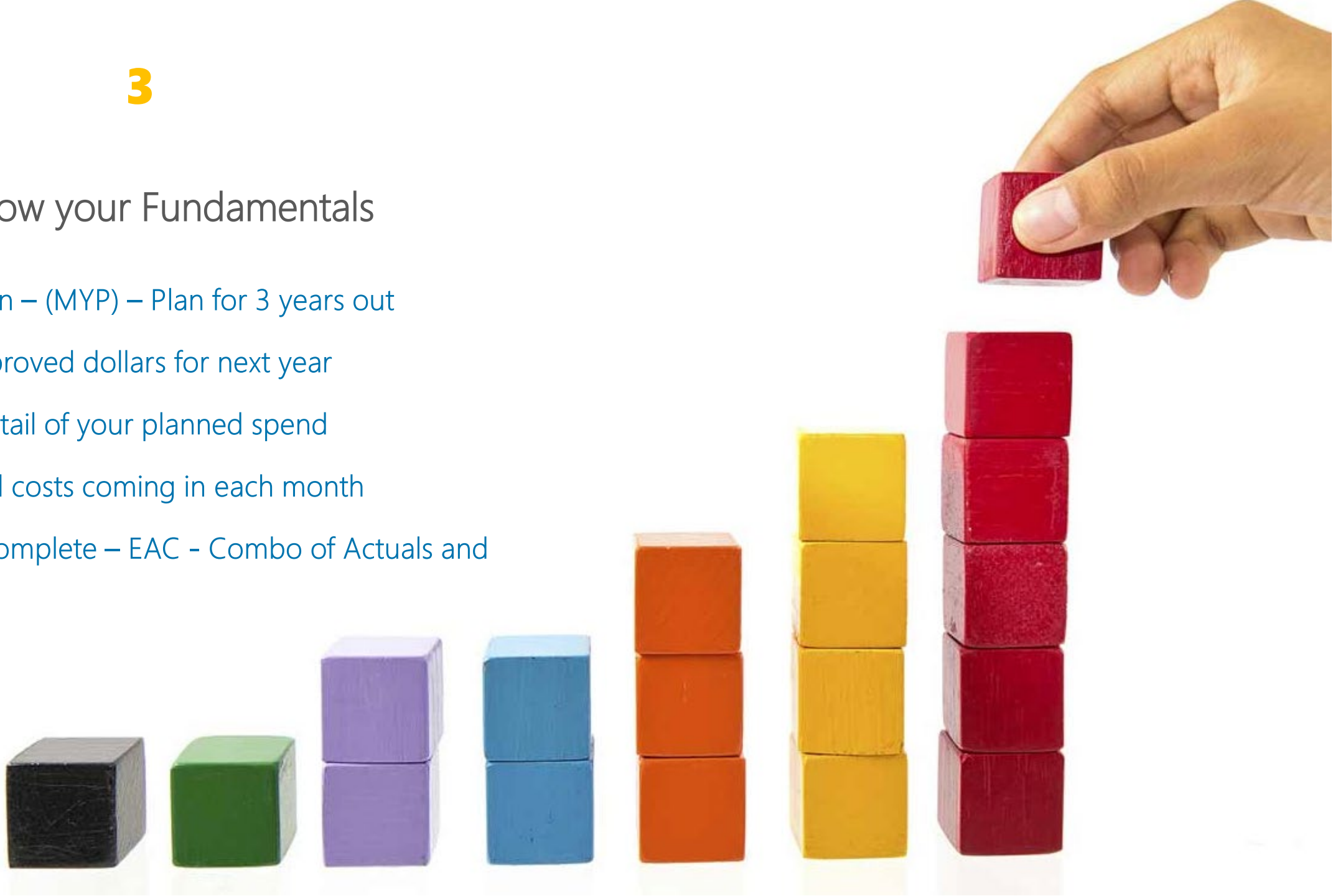
Understand your data, systems, and the processes

- ✓ There will be multiple costs from different systems
- ✓ Know timing/flow of data into your project/business reporting
- ✓ Know the IT and business processes behind the data
- ✓ Know the rigor of the teams providing the data

3

Know your Fundamentals

- ✓ Multi Year Plan – (MYP) – Plan for 3 years out
- ✓ Budget – Approved dollars for next year
- ✓ Forecast – Detail of your planned spend
- ✓ Actuals – Real costs coming in each month
- ✓ Estimate at Complete – EAC - Combo of Actuals and Forecast





4

Set up a strong Foundation

- ✓ Make sure MYP, Budget, Actuals, Forecast, and EAC are connected
- ✓ Proper Project Business Strategic attribution
- ✓ Labor/Resources
- ✓ Non Labor – Servers, software, training, vendor spend
- ✓ Fixed Costs – Building and Equipment
- ✓ Variable Costs – Production Costs, Materials

5

Know your Timelines

- ✓ May to July - MYP
- ✓ Aug to Sep - Budget
- ✓ Oct to Dec – Project set up for forecast and actuals
- ✓ Monthly tracking of project progress
- ✓ Quarterly – Reporting to senior management
- ✓ Ongoing – Changes to all the above





6

Know your Details

- ✓ Consistency is critical
- ✓ Know your labor rates
- ✓ Know the scope of the Project or Business
- ✓ Know when deliveries are planned
- ✓ You will be questioned on every cost detail



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Any Questions?

TO INFINITY AND
BEYOND!

