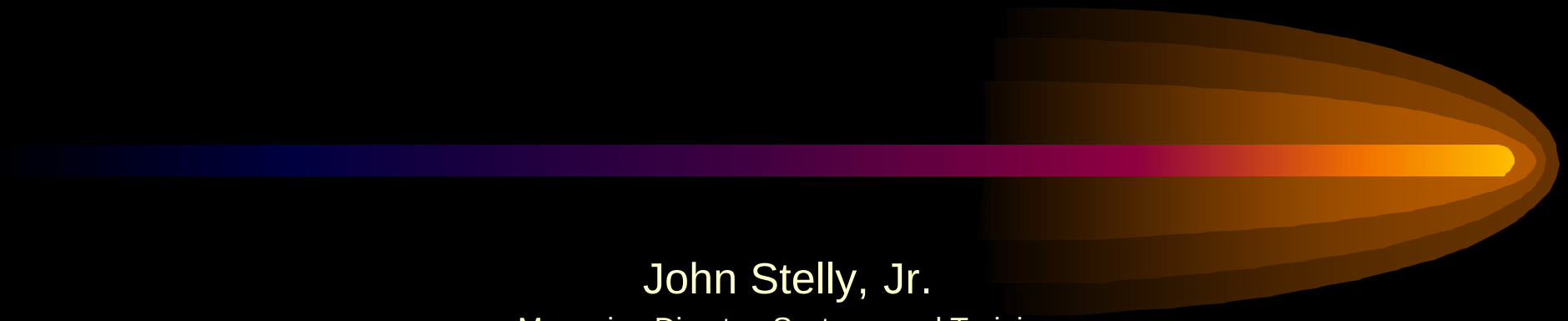
Investing in Human Factors Training: Assessing the Bottom Line



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Overview

- **Benefits / Cost / Timing**
- **Example : “Icarus Airways”**
- **Finance 101**
- **Bottom Line**

Benefits vs. Costs

- Benefits
  - **“Hard” or “Tangible”**
    - Reduced Ground Damage
    - Fewer On the Job Injuries
    - Reduction of Delays & Cancellations
    - Fewer / Less Costly Fines
    - Increased Dispatch Reliability
  - **“Soft” or “In-Tangible”**
    - Increased Communication
    - Smoother Shift Turn Overs
    - Perception of the Flying Public
    - Increased Job Satisfaction
    - Teamwork
- Costs
  - **Start-Up**
    - Development / Research
    - Materials
    - Video
    - Computer
    - Prototype / Review
    - Personnel
  - **Ongoing**
    - Instructor Time
      - In-house vs. OSV
    - Student Time
      - OT vs. Straight time
    - Facility / Equipment Rental
    - Materials
    - Travel / Per diem
    - Shipping
    - Enhancements / Upgrades

Cost Factors To Consider

- **Who**
  - **Management**
  - **AMTs only**
- **How Many**
  - **Total / Per class / classes per year**
- **Length of Class**
  - **4 hour**
  - **1-day**
  - **2-day**
- **Where**
- **Type of Classes**
  - **HF Facilitator**
  - **MX Instructor**
  - **CBT / Video Based**
  - **Recurrent**
- **Cost of OT coverage for students**
- **Company's Cost of Capital**

Tangible Benefits to Consider

- **Safety**
  - **Ground Damage**
  - **On the Job Injuries**
- **Dependability**
  - **On-Time Departures**
  - **On-Time Maintenance**
- **Efficiency**
  - **Contained Overtime Costs**

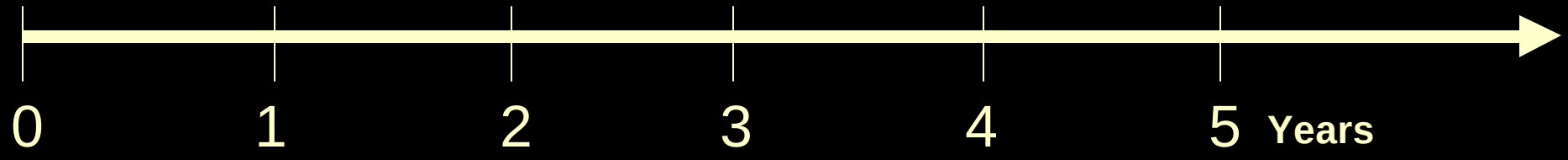
In-Tangible Benefits to Consider

- **Increased Communication**
- **Smoother Shift Turn Overs**
- **Perception of the Flying Public**
- **Increased Job Satisfaction**
- **Teamwork**

Timeline

Benefits Per Year

Total Benefits



Costs Per Year

Total Costs

"Icarus Airways" Assumptions

- **2000 students (Management & Technicians)**
- **5 Years**
- **20 students per class**
- **Year 0 - Development Time**
- **Year 1 - 20 classes per year**
- **Year 2 - through 5 - 30 classes per year**
- **2 Major Facilities / 10 Smaller Stations**
- **1 HF Engineer / Facilitator (12 trips per year)**
- **Overtime for Graves & Second Shift (1/2 population)**

Start-Up Cost Breakdown

TYPE	FORMULA	COST
Developer		
Two Each for 1 Month	$4,500/Mo X 1.3 (Benefits) X 2	$ 11,700
Materials		
Research, Equipment		$ 2,000
Video		
Develop In-House	$1,000/Min X 30 Min = $30,000	
Purchase OTS	Rights to copy	$ 7,500
Prototype / Review		
~30 Hrs X 2	$63.34/Hr X 2	$ 3,800
	Total Cost for Development	$ 25,000

On-Going Cost Breakdown

TYPE	FORMULA	COST
Facilitator	$33.75/Hr X 24 Hrs	$ 810
Travel / Per diem	$150/Day X 3 Days	$ 450
Student OT Coverage	20 Students X $10.88/Hr X 8 Hrs	$ 1,740
Facility / Classroom / Equip.		$ 200
Shipping of Materials		$ 100
Course Changes & Upgrades		$ 100
Measurement & Evaluation		$ 100
	Cost Per Class	$ 3,500

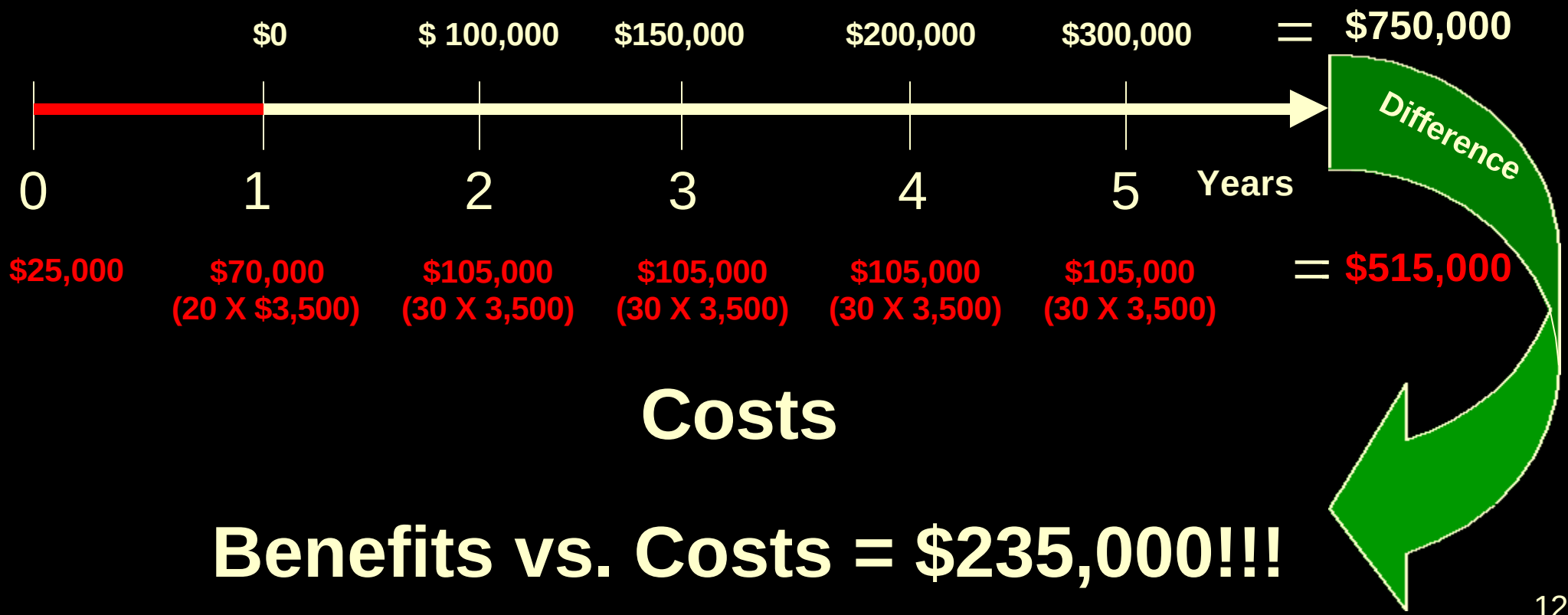
Ongoing Benefits Breakdown

TYPE	COST AT "YEAR 0"	% REDUCTION	BENEFITS @ Year 5
Tangibles			
Ground Damage	$ 147,058	*68%	$ 100,000
On the Job Injuries	$ 666,666	*12%	$ 80,000
Overtime	$ 200,000	*10%	$ 20,000
In-Tangibles			
Delays & Cancellations	$$ / Delay ?		$ 50,000
	$$ / Cancellation?		
Shift-Turnovers			$ 25,000
Team Work			$ 25,000
	Total Benefits at Year 5		$ 300,000

*Ref: Report “Crew Coordination Concepts for Maintenance”, Stelly & Taylor, 1992

"Icarus Airways"

Benefits



Costs

Benefits vs. Costs = $235,000!!!

“Finance 101”

- **Return On Investment**
- **Cost of Capital**
- **Time Value of Money**

(Hint: Do not proceed without a friend from Finance!)

Return on Investment

ROI = (Benefits - Costs) ÷ Costs = ? %

\ (750 - 515) ÷ 515 = 45% ROI

Looking Good!

What's your Company's Cost of Capital?

Example :

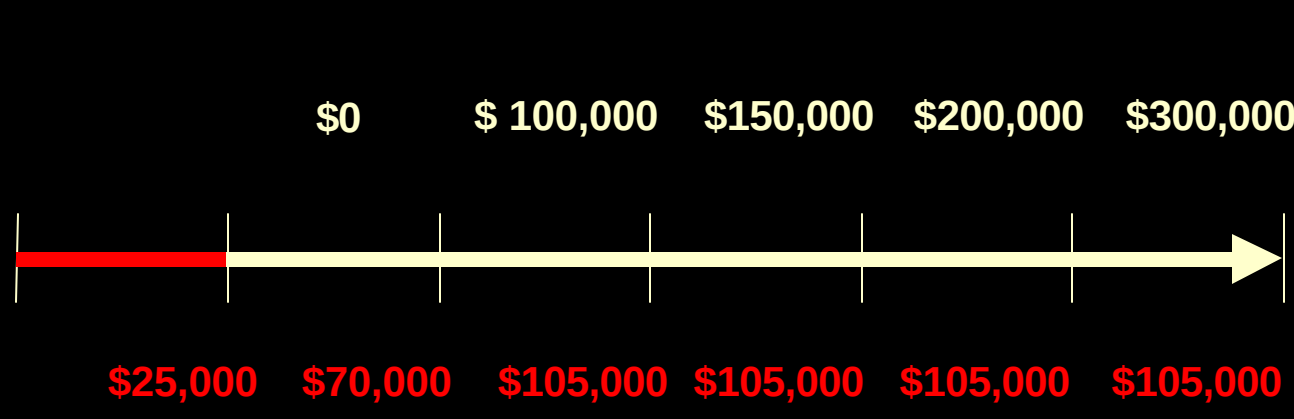
"Icarus Airways" is 12%

(MRM ROI) - (C of C) = Difference

\ 45% - 12% = 33%

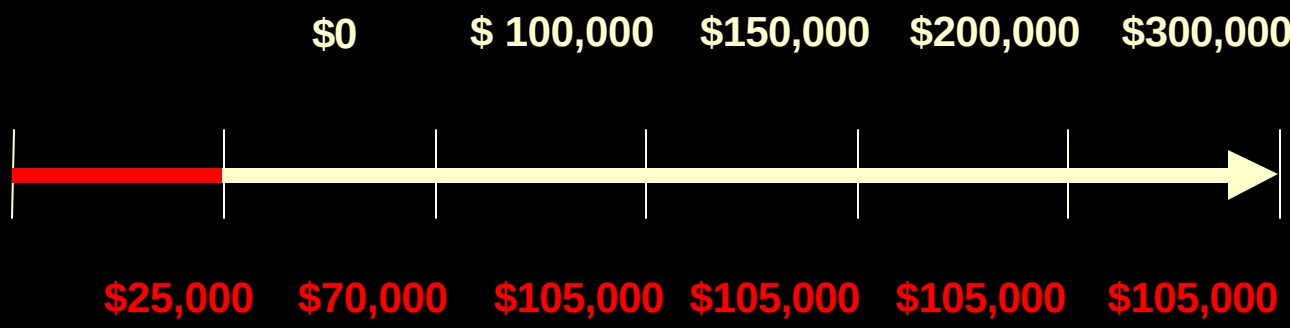
Still Looking Good!

Time Value of Money



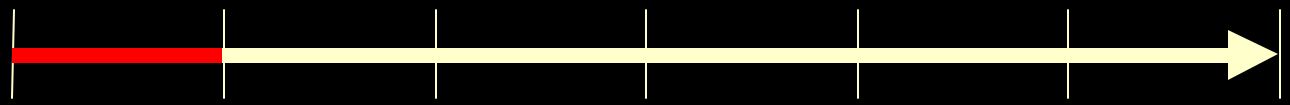
Time Value of Money

Year	Present Value	Sum
Benefits	$ 431,980	$750,000
Costs	$ (332,367)	$515,000
Net	$ 99,613	



Time Value of Money

Year							Sum
	Present Value						
Benefits	$ 431,980	$0	$ 100,000	$150,000	$200,000	$300,000	$750,000
Costs	$ (332,367)	$25,000	$70,000	$105,000	$105,000	$105,000	$105,000
Net	$ 99,613						$515,000



New ROI ($431,980 - $332,367) ÷ $431,980 = **23%**

Time Value of Money

Year							Sum
	Present Value						
Benefits	$ 431,980	$0	$ 100,000	$150,000	$200,000	$300,000	$750,000
Costs	$ (332,367)	$25,000	$70,000	$105,000	$105,000	$105,000	$105,000
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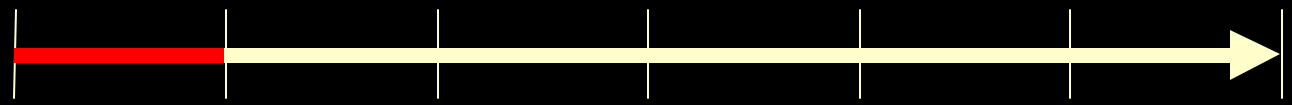

New ROI ($431,980 - $332,367) ÷ $431,980 = **23%**

Still looks better than 12%!

If The Numbers Don't Work

- **Reduce class hours**
- **Look for other benefits**
- **Re-evaluate your costs**
- **Less aggressive schedule**
- **Go to an Outside Vendor (OSV)**
- **Use Off-the-Shelf (OTS) Program**
- **Show video followed by discussion**
- **Consider Computer Based Training (CBT)**

“Bottom Line”

- **Talk to Finance first, not last!**
- **Define your “True Costs”**
- **Phase in benefits and costs over time**
- **Be aware of the “Time Value of Money”!**

Thank You!