

# The cost of IT & The value of IT

MIS3534 | STRATEGIC MANAGEMENT OF IT

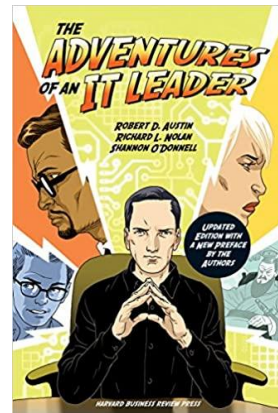
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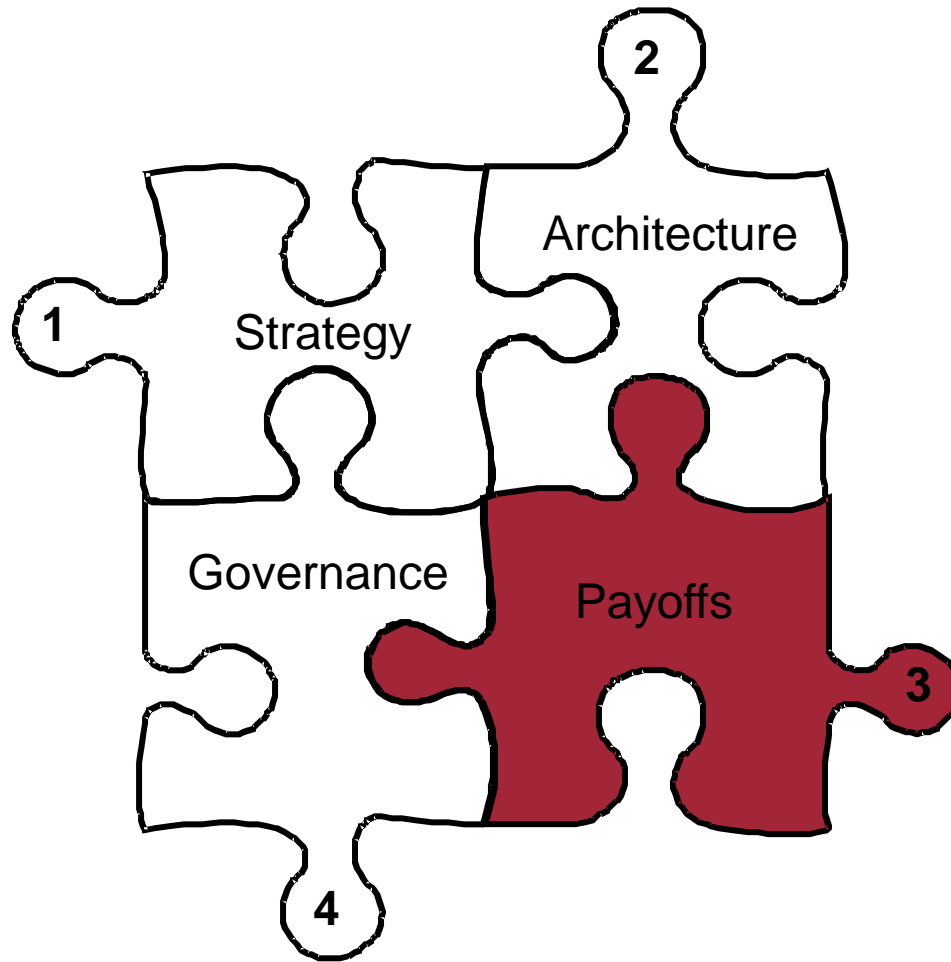
Marie-Christine Martin



# Chapter 4 & 5 – Prepared Questions (Day 2)

1. How do IT investments create value or enable creation?
2. What insights about IT value did you garner from Maggie's and Ruben's thoughts on the subject?
3. What are "legacy" systems, and what should be done about them?





**You Cannot Manage What you Cannot Measure**

# Agenda

- IT payoff clock
- Four tricky properties of IT
- Operational vs. financial metrics
- Real options thinking

**IT payoff clock:** Sequential steps for IT to deliver financial benefits

**Operational metrics:** Short-term metrics that judge IT impact

**Financial metrics:** Long-term metrics that judge IT's bottom-line impact

**IT funding dilemma:** Simple, accurate, or fair; **pick any two**

**80/20 rule:** 20% metrics provide 80% insight into IT's business value

**Capital versus operating costs:** Upfront versus the larger ongoing costs of keeping IT assets running

**Real options:** Flexibility without the obligation to do something in a project

# The Four Trillion Dollar Question

## #1 capital expense today

## 80% firms unable to answer basic, fair questions

- Are we **getting our money's worth**?
- **How much does it cost** and who foots the bill?
- Are we investing **in the right places**?
- **How do we tread** when the payoff is potentially huge but uncertain?

## Notoriously difficult to quantify $\neq$ excuse

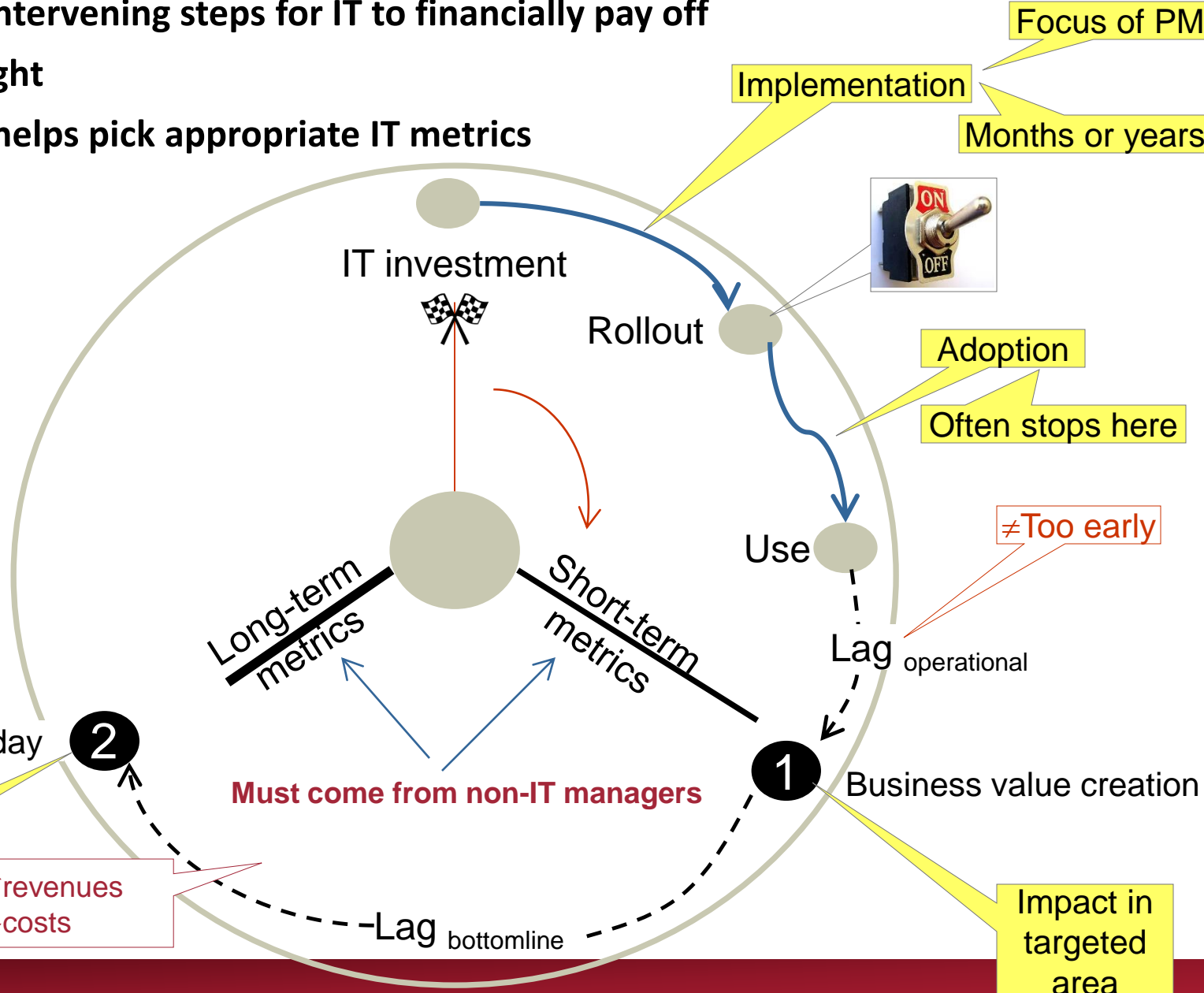
## Non-IT managers contribute **fiscal sensibility**

- Connects IT strategy to **managerial accounting** and **corporate finance**

## Goal: **A healthy return** on IT investments

# IT Payoff Clock

A sequence of intervening steps for IT to financially pay off  
Each must go right  
Grasping them helps pick appropriate IT metrics



# Four Challenges (tricky properties) with IT Investments

## 1. Intangibility of benefits

- Increased customer satisfaction, faster decision-making, brand awareness, or improved collaboration inside
- Benefits only if they eventually show up in **bottom-line**

## 2. Lags in impact... rarely immediate

- Takes time for apps to be **absorbed into operations**
- IT infrastructure requires **complementary IT investments** to leverage it

## 3. Difficult to be **sure that they caused** observed improvements

- Challenge **worsens with longer lags** in the payoff clock
- Must track **year-on-year changes** and **benchmark against archrivals**

## 4. Complementarities

- One IT investment can be **worth more in conjunction** with another
  - e.g., **Starbucks' iOS app** more valuable with cash registers to can process app orders
- Requires tracking **entire portfolio's impact**, not individual projects



## Measurement drives behavior

**Must nudge IT to move your firm towards its strategic aspiration**

- Common problem: **Too many** metrics create dysfunction

**Three criteria for finding the 20% in the 80/20 rule:**

- 1. Worth more than they cost**
- 2. Competitively insightful: Linked to strategic aspiration, archrivals**
- 3. Objective, spanning short and long term**
  - Beyond satisfaction surveys
  - Reliably compare IT investments with each other, and year to year
  - The two “lags” in the payoff clock defines time frames

# How Much Does IT Cost?

**Total IT costs tricky to pin down because of two components:**

- 1. Capital expenditures:** Costs of purchasing or building new IT systems
- 2. Operating costs:** Ongoing cost of running IT assets (the lion's share of corporate IT costs)
  - e.g., salaries, support, licensing, maintenance, and training

**Focus on total cost (TCO) of getting and running an IT asset over its lifetime**

- ~ like buying a car: Upfront + maintenance costs

# Will a Project be Worthwhile? Three Approaches...

## 1. **Net present value (NPV): Project's benefits minus costs**

- Intuitive, widely understood workhorse
- Uses **NPV rule** (+ /-)
- Three dangerous **NPV traps**
  - Costs underestimated 50-100% and benefits notoriously difficult to even guesstimate reliably
  - No place for uncertainty ← pervasive in IT projects
  - Cannot account for intangible costs and benefits

## 2. **Hurdle rate rule (min ROR): Good intent, but firm can set it too high if benefits can't be quantified**

## 3. **Return on investment (ROI): Helps judge opportunity costs of doing a project**

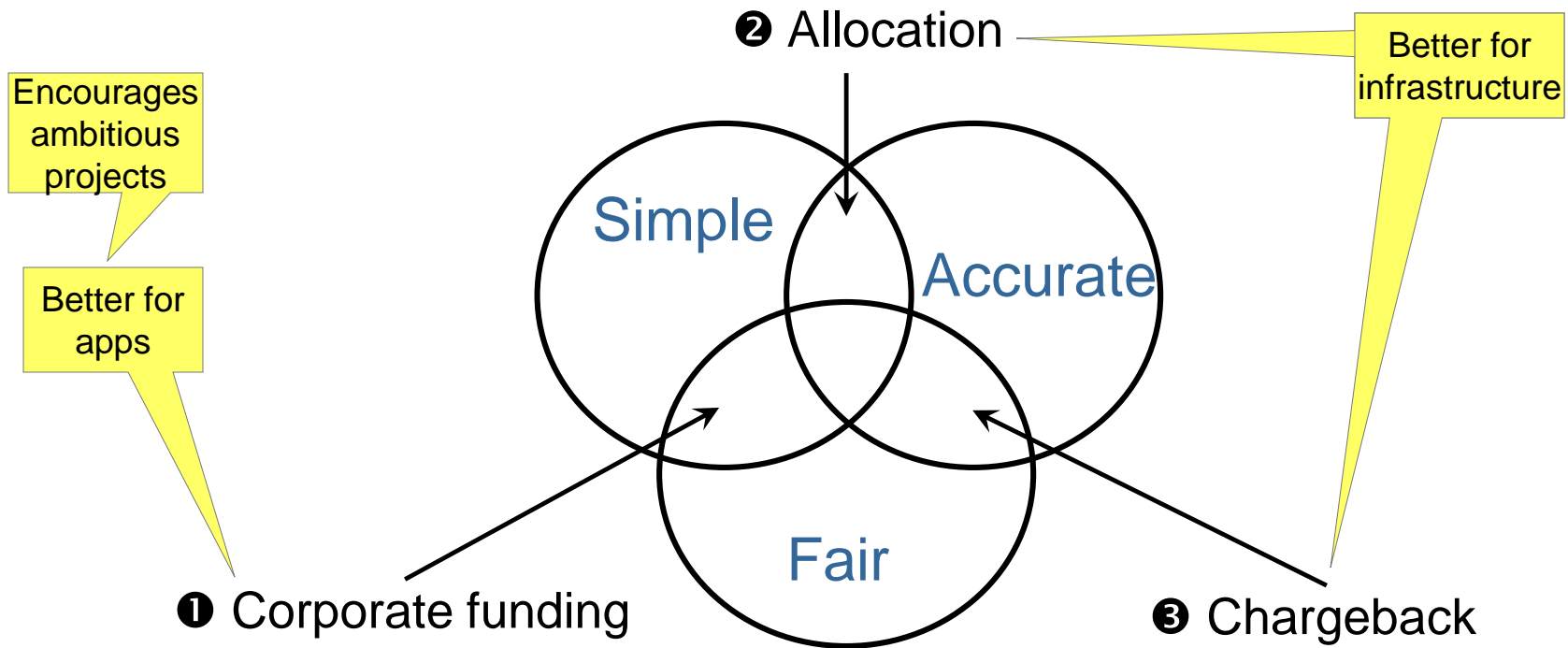
**Downside: Focus on recouping costs but  
unconnected to firm's strategic competitiveness**

## Three Approaches to Funding Corporate IT

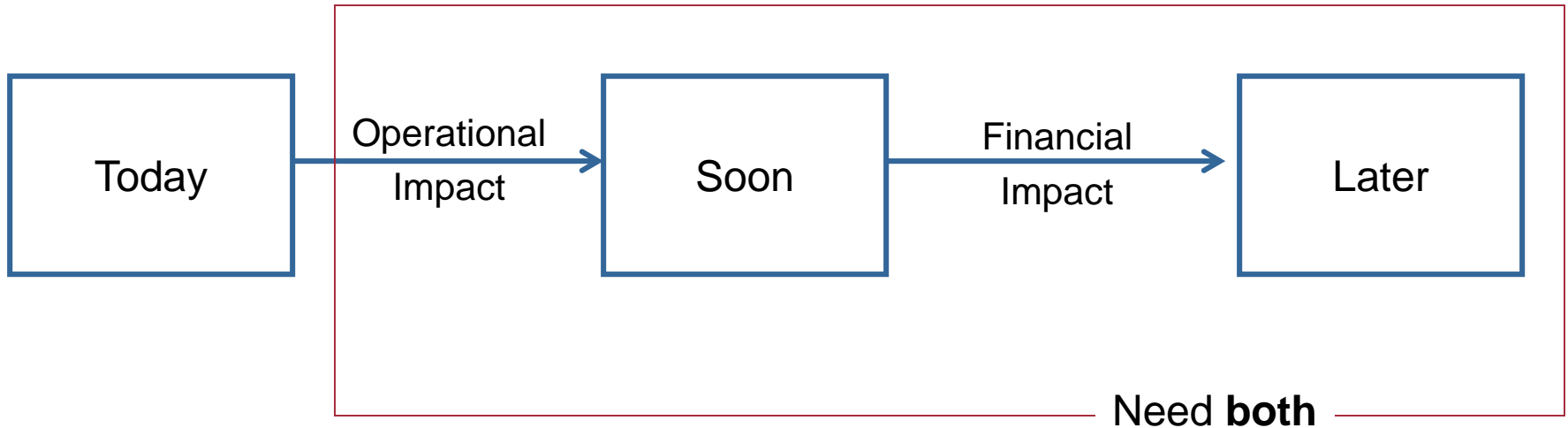
Simple, accurate, fair: Pick any two

<u>Approach</u>	<u>Mechanism</u>	<u>Who pays</u>	<u>Upside</u>	<u>Downside</u>
Corporate funding	Firmwide budget	Corporate	<ul style="list-style-type: none"><li>👍 Simple</li><li>👍 Encourages ambitious projects</li></ul>	<ul style="list-style-type: none"><li>👎 IT competes with other spending priorities</li></ul>
Allocation	Divvies costs per user	Line functions	<ul style="list-style-type: none"><li>👍 Simple</li><li>👍 Low bookkeeping overhead</li></ul>	<ul style="list-style-type: none"><li>👎 Unfair ← overlooks usage</li></ul>
Chargeback	Depts billed on usage	Line functions	<ul style="list-style-type: none"><li>👍 Fair</li><li>👍 Sensitizes to IT costs</li></ul>	<ul style="list-style-type: none"><li>👎 Onerous bookkeeping</li></ul>

## Pick Any **Two**



# Business Value of IT



**Are we getting our money's worth?**

**Quantifiable data trumps blind faith**

- Forces accountability and precise thinking

**Short-term: Operational metrics capture such operational impacts**

- Measure the IT unit against its promises to the line functions

**Long-term: Eventually, an operational improvement increases revenues or reduces costs**

- Must show up in a firm's margins

# Short-term = Operational Metrics

## A necessary **stepping stone** to IT's financial benefits

- Must come **from non-IT managers** in a project's **functional domain**
- Must tie directly to a project's **business** objectives
- Must focus on business **outcomes, not what a project does**
- Help IT folks see their work in the big-picture of your firm
- **IT strategy** meets **managerial accounting and operations management**

## **Needs a frame of reference to contextualize**

- A raw operational metric (e.g., inventory turns 4.6) says little about **IT's impact**
- Focus on **before-and-after change ( $\Delta$ )** and **vis-à-vis** archrivals
- Important for non-IT managers **to pick  $Lag_{operational}$  carefully**

## **A good operational metric must explicitly articulate:**

- The project's **promise**. Better, faster, or cheaper?  $\uparrow$  revenues or  $\downarrow$  costs?
- **Unit** of measure: Dollars, percentages, or a raw number?
- **Time to impact**

**Non-IT contributions: (a) an operational metric and (b) the appropriate lag**

Gauge the contribution of **the whole IT portfolio** to your strategic aspiration

IT strategy meets corporate finance

**Two types** - Focus on  $\Delta$  (changes)

**1. Backward looking:** How previous IT investments have affected your firm

1. **Operating margins:**  $\Delta(\text{Revenues}-\text{costs})$
2. **Return on invested capital:**  $\Delta(\text{Profit}/\text{capital invested to generate it})$ 
  - Closely tracks labor productivity and asset productivity

**2. Forward looking:** How your IT is strengthening your firm's future potential

1. **Tobin's q model:**  $\Delta(\text{Your firm's market value}/ \text{replacement value of all its assets})$ 
  - sensitive to industry...so benchmark against archrivals
  - usable in public firms, but not private firms or nonprofits
2. **P/E ratio**  $\Delta$  Ratio of share price and earnings per share
  - Increase signals confidence in future profitable growth
  - Reasonably attributable to IT = 50% asset investments



# Are We Investing in the Right Places?

Analyzing **your IT portfolio** is key

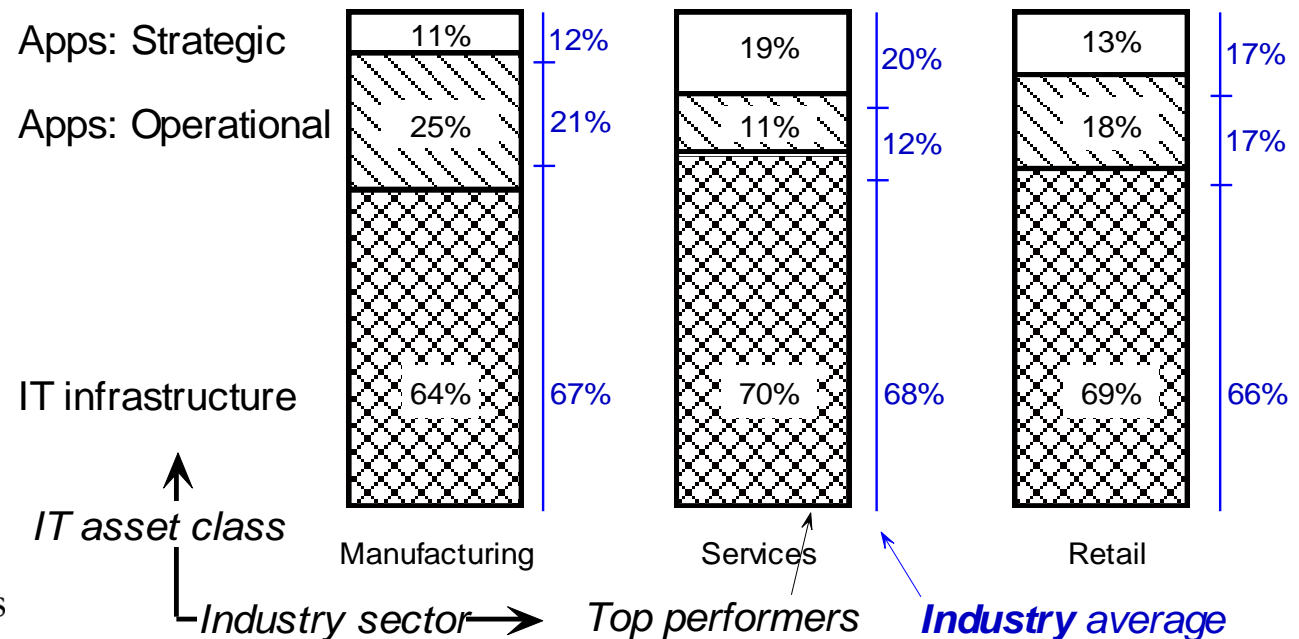
## 1. Varies by industry...

- Ideal portfolio, some more industries infrastructure-heavy and others apps-heavy
- IT spending as % of revenue
- Note what IT asset classes top performers invest less/ more in
- 70% IT assets are infrastructure—which never provides competitive advantage

## 2. One size does not fit all

- Low-cost - focus on operational efficiency (e.g., automation, SCM)
- Differentiation strategy - strategic apps (innovate in products/ services)

How much you spend is less important than **how** you spend it



**Firms must contend with IT investments uncertainty**

**Real options thinking helps manage high-risk, high-return IT investments**

- Real options **thinking** more valuable than quantification

**Views uncertainty as **unavoidable but manageable** part of IT strategy**

**Recognizing uncertainty increases certainty**

**Allows flexible pursuit of high-risk projects without overcommitting to**

- New, unproven technologies or
- Ideas with uncertain business benefits

$$\text{NPV} = (\text{Benefits} - \text{Costs})$$

**NPV rule:** Proceed if +ve, reject if -ve, and a tossup if zero

- Workhorse...but uncertainty has no place in NPV math
- Can mislead when uncertainty in an IT project prevents you from reliably estimating benefits or costs
- Dysfunctionally conservative

**Risk:** Rejecting a strategically promising IT project

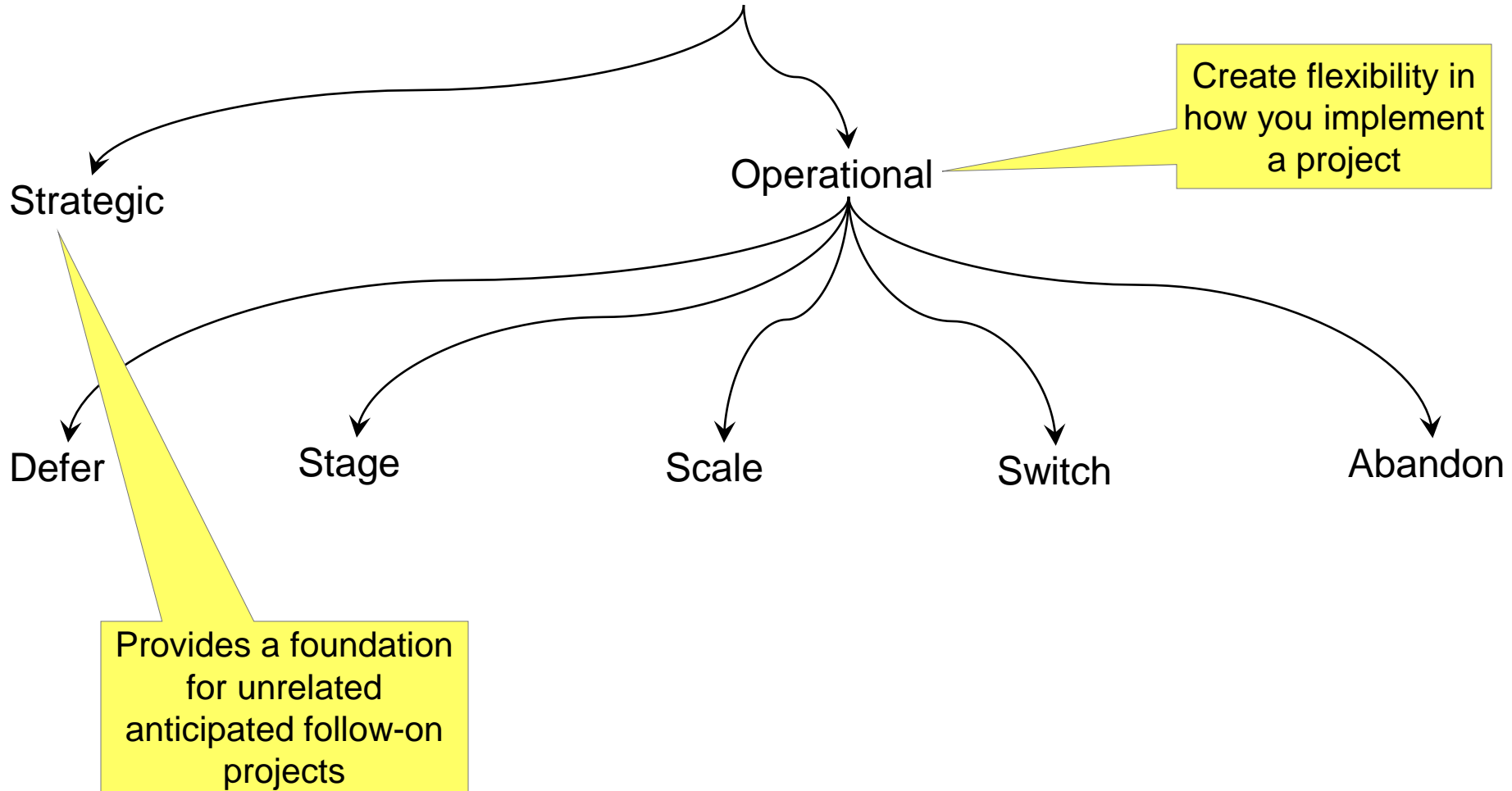
**Real options as an antidote** ← exploits uncertainty

- **Flexibility** to do something in the future without having to do it
- Caps losses on risky bets but preserves their upside

**IT assets differ from capital assets in three ways:**

1. Inherently flexible
2. Near-zero reproduction costs
3. Don't need to discontinue original use if redeployed for new use

# Six Flavors of Real Options



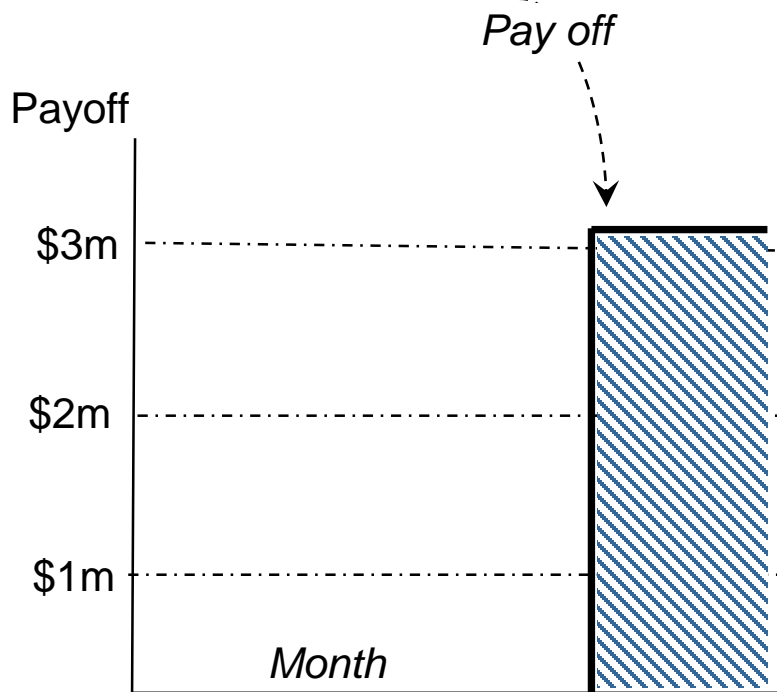
# Operational Options

- 1. Defer: Can delay project without forsaking a market opportunity**
  - **Trap:** Misjudging deferability create lock-out in Red Queen competition
- 2. Stage: Broken into sequence of independent smaller stages**
  - Risky big-bang projects become baby projects with demonstrable benefits
  - **Trap:** Failing to make a baby subproject independent of later ones
- 3. Scale. Can cost-effectively scale up without exploding complexity**
  - **Trap:** Poor choice of app architecture, which often creates this option
- 4. Switch: Repurposable for a different use (use) or swapping out a key building block (inputs)**
  - Differs from strategic growth option, which uses the project as a foundation to create an unrelated new asset
  - **Trap:** Non-modular design prevents switching building blocks
- 5. Abandon: Project can be terminated, possibly with some salvage value**
  - In theory, any project can be abandoned
  - In practice: Sunk costs, loss of face, and political pressure even if doomed
  - Surefire tactic: **Predefine objective exit criteria and then hand over its kill switch to a non-IT manager outside project team**

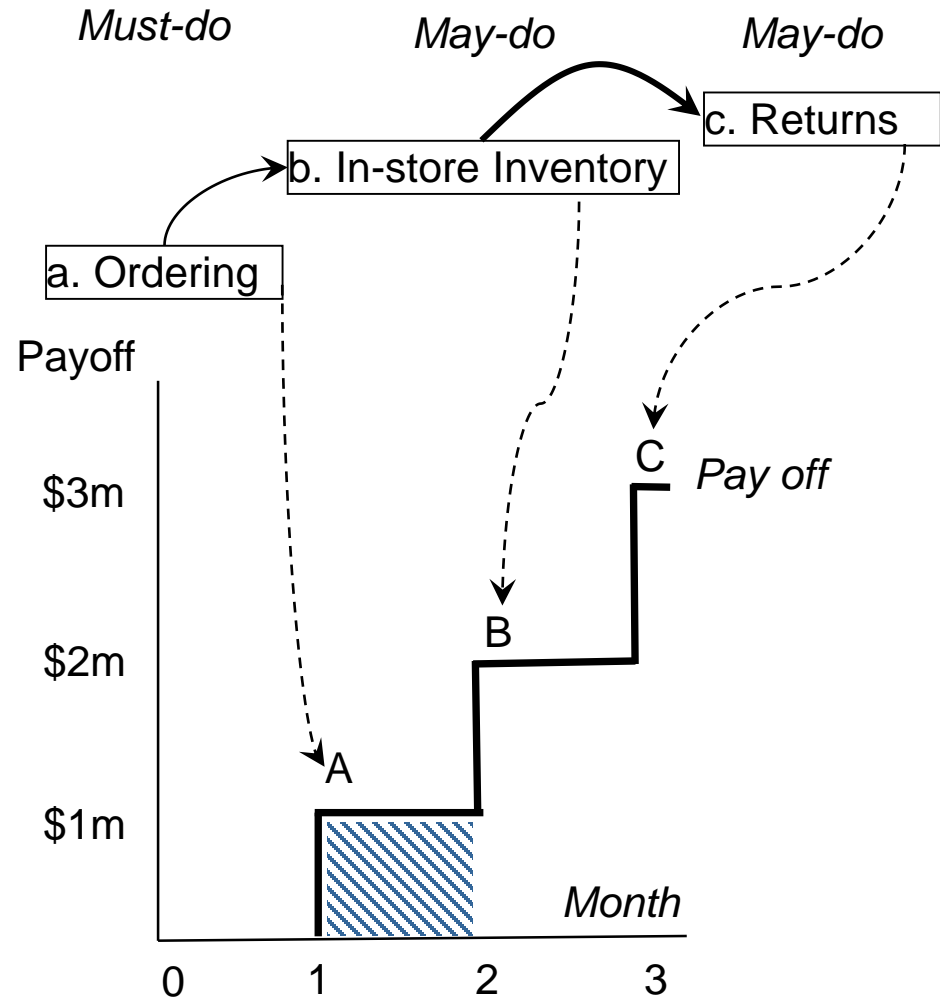
# An Illustration of Options Use

## Big-bang approach Without options

- Ordering
- In-store inventory
- Returns



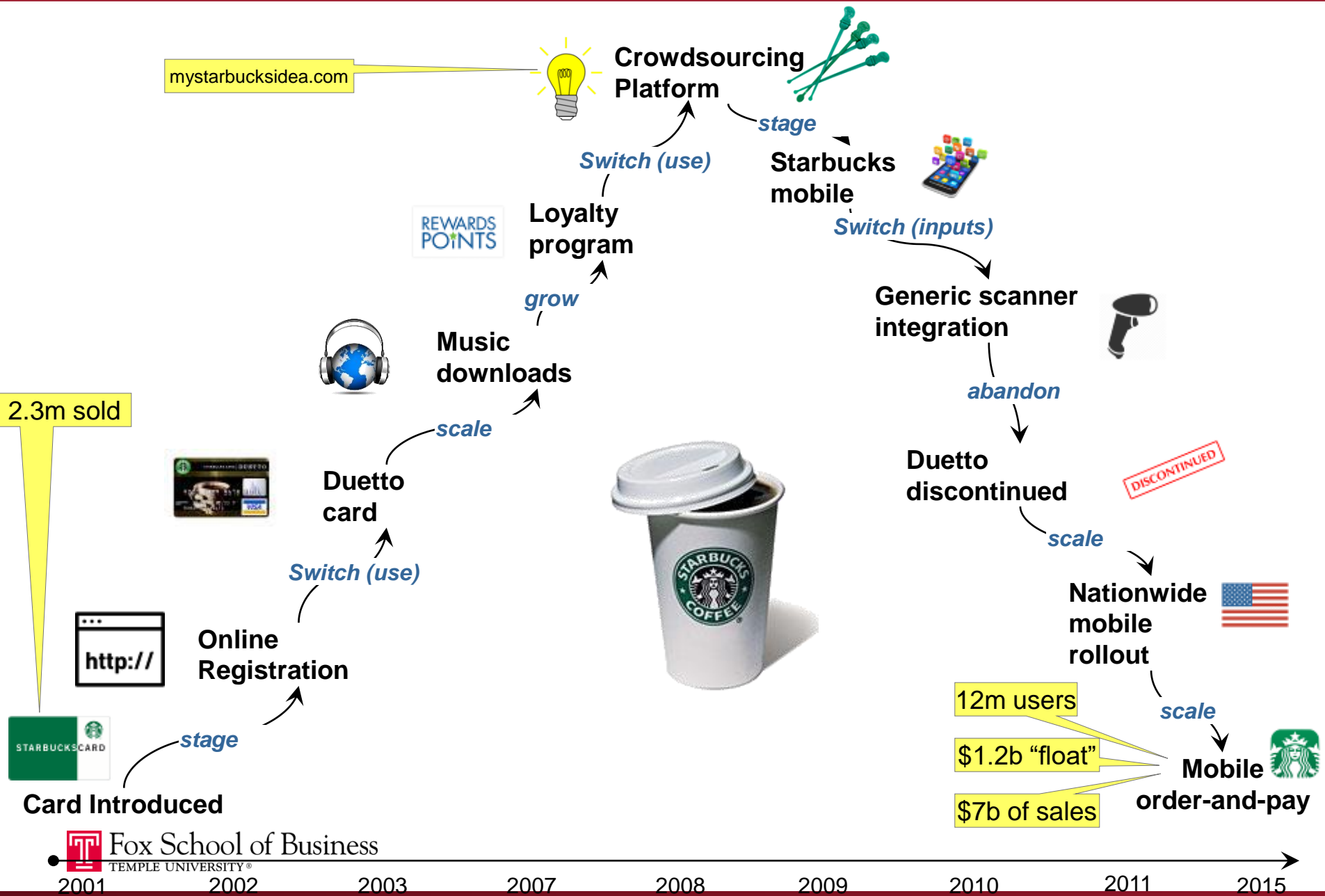
## With options



1. Ensure that the baby projects **make business sense**
2. Ensure that the **flexibility exercised in a timely manner**
3. **Gatekeeping** with the kill switch if project veers off course

Focus on *must-do*

# Starbucks Card over 15 Years





**IT payoff is messy – intangible benefits, impact lags investment, causal ambiguity, need for complements**

**IT payoff clock - tracks lagged operational and bottomline impacts**

- Must track changes, benchmark with archrivals

**80/20 rule - cost-effective, strategically-insightful, and objective**

**Short-term metrics measure IT's operational impact - better, faster, or cheaper in project's business domain**

**Long-term metrics measure IT's bottomline impact**

- Both backward- and forward-looking

**Real options create flexibility under uncertainty**

# Day 3: ICA

- The Value of IT



# In your group:

- **Review the Common IT Operational Impacts & Metrics page**
- **Brainstorm on the appropriate Operational Metric for each Operational Impact**
- **Prepare your slide and be ready to explain your choices**

# Common IT Operational Impacts & Metrics

<u>Project's promise</u>			<u>Operational impact</u>	<u>Operational metric</u>	<u>Effect on margin</u>	
<u>Better</u>	<u>Faster</u>	<u>Cheaper</u>			<u>↑ revenue</u>	<u>↓ costs</u>
•			Employee productivity		•	•
•			Capital asset productivity		•	•
•			Collaboration		•	•
•			Supply chain management		•	•
•			Value added		•	
•			Customer loyalty		•	
•		•	Reach new customers		•	
•			Enter new markets		•	
•			Create new revenue stream		•	
		•	Reducing IT costs			•