The Software Industry

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FOSS C01


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WORLD WARCRAFT

The Software Industry

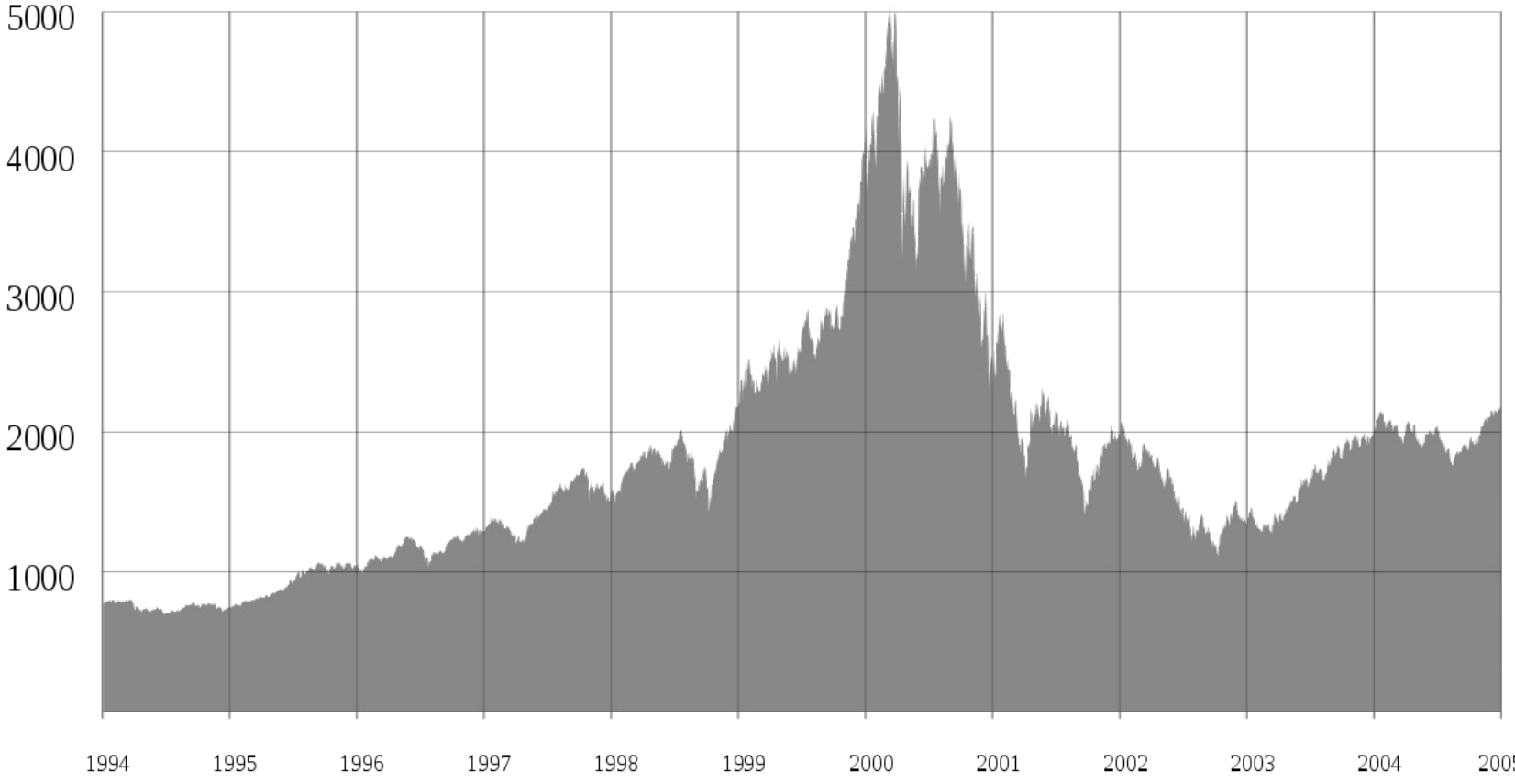
- The software industry
  - Is the set of business that provide
    - Software products and
    - Software services such as
      - Operating services
      - Consulting services
        - Development services
        - Implementation services
  - to other industries as well as itself
- The software industry
  - Is highly concentrated
  - Is highly internationalized
  - Has strong network effects
  - Has a high speed of innovation
  - Is rapidly expanding into new domains

The Software Industry in 2016 [1]

market capitalization	total	$1.298 trillion
	median	$744.2 million
	highest	$415.4 billion (Microsoft)
	lowest	$177 700 (Innovaro Inc.)
earnings per share	median	$0.20
	highest	$13.23 per year (IBM)
	lowest	– $3.40 per year (Wave)
dividend yield	mean	8.913%
	highest	170.3% (Aware)
	lowest	0.07106% (FICO)

[1] https://www.wolframalpha.com/input/?i=how+big+is+the+software+industry

The So-called “Dot-Com” Bubble and Burst (1995-2000)




Software
is eating
the world
WSJ, 2011-08-20

Venture Capital and Open Source (Recap)

Increasing Open Source **Investment Pace**

	<5 YEARS	5-10 YRS	>10 YEARS	AGGREGATE
OSS COMPANIES FOUNDED (1ST INST. INV.)	31	19	8	58
VC INVESTMENT BY FOUNDING VINTAGE ($M)	$1,802	$2,847	$255	$4,904
VC INVESTMENT BY YEAR BUCKET ($M)	$4,237	$506	$161	$4,904
VALUATION BY FOUNDING VINTAGE ($M)	$8,174	$12,719	$16,992	$37,886
EXCL. RED HAT			$1,938	$22,832

“It is actually open source software that’s eating the world.” [V15]

The CEO Interview

"Industrial companies are in the information business whether they want to be or not."

—Jeff Immelt

McKinsey&Company

Short History of the Software Industry

- **1959**
  - First mentioning of term “software”
- **1969**
  - US DoJ separates hard- from software
- **1980ties**
  - From vertical to horizontal integration
  - Growth of platforms and ecosystems
- **1990ties**
  - Centralization, dominance of Windows
- **2000ties**
  - Diversification, multiple platforms
  - Growth of open source software
- **2010ties**
  - Back to vertical, cloud computing

Main Industry Players

- **Software vendors**
  - Produce products
    - A.k.a. “standard software” or “commercial off-the-shelf software” (COTS)
- **Operating services firms**
  - Operate any form of software (and hardware)
- **Development services firms**
  - Produce custom software
- **Implementation services firms**
  - Adjust software products for use by customers
- **Regulatory bodies**

Software is a Digital Good

- **Digital good**
  - A digital artifact satisfying a human need
  - Without further intervention
    - No or low reproduction costs
    - Perfect reproduction possible
- **Software** as a digital good
  - Typically high cost to first copy
  - Typically high switching costs
- Examples
  - Consumer software (Games, social media, etc.)
  - Enterprise software (SAP Business Suite, Oracle RDBMS, etc.)

Software as a Product

- **Product**
  - A man-made good sold to customers in a market
- **Software** as a product
  - A product sold to either enterprise or retail customers
  - What is sold is a license, a usage right, plus services
- Characteristics
  - Has an open-ended life-cycle: Is born, may life forever
  - Typically requires upfront capital investment (development)

Core, Basic, and Whole Product

- **Core product** =
  - Core software
- **Basic product** = bundle of
  - Software + complementary materials + self-help services
  - Guarantees about fitness for use + indemnification
  - Support services
- **Whole product** = basic product +
  - Training
  - Consulting
  - Operations
- For more, see our **Product Management** course

Whole product

Basic product

Usage rights

Software (core product)
- Core software
- Additional software (extensions + plug-ins, tools and utiltiies, integrations)

Complementary materials
- Documentation
- Training materials

Self-help services
- Forums, mailing lists
- Help and chat agents
- On-line tutorials

Pricing of usage rights
- Quantity: User, machine, time, …
- Duration: Perpetual, time-limited, …
- Structured: Initial license fee, regular maintenance fee

Guarantees (“insurance”)
- Fitness for use, certification
- Indemnification

Pricing of guarantees
- By damage: Loss of business, fines received
- Structured: Levels / bands, formula

Support services
- Hot-line support
- On-site servicing

Pricing of support services (SLAs)
- By availability: Incident-based, 9x5, 24x7
- By quality: First-level, second-level, third-level

Training
- In-house training
- Off-site training

Pricing of training
- Fixed fee
- Per participating person

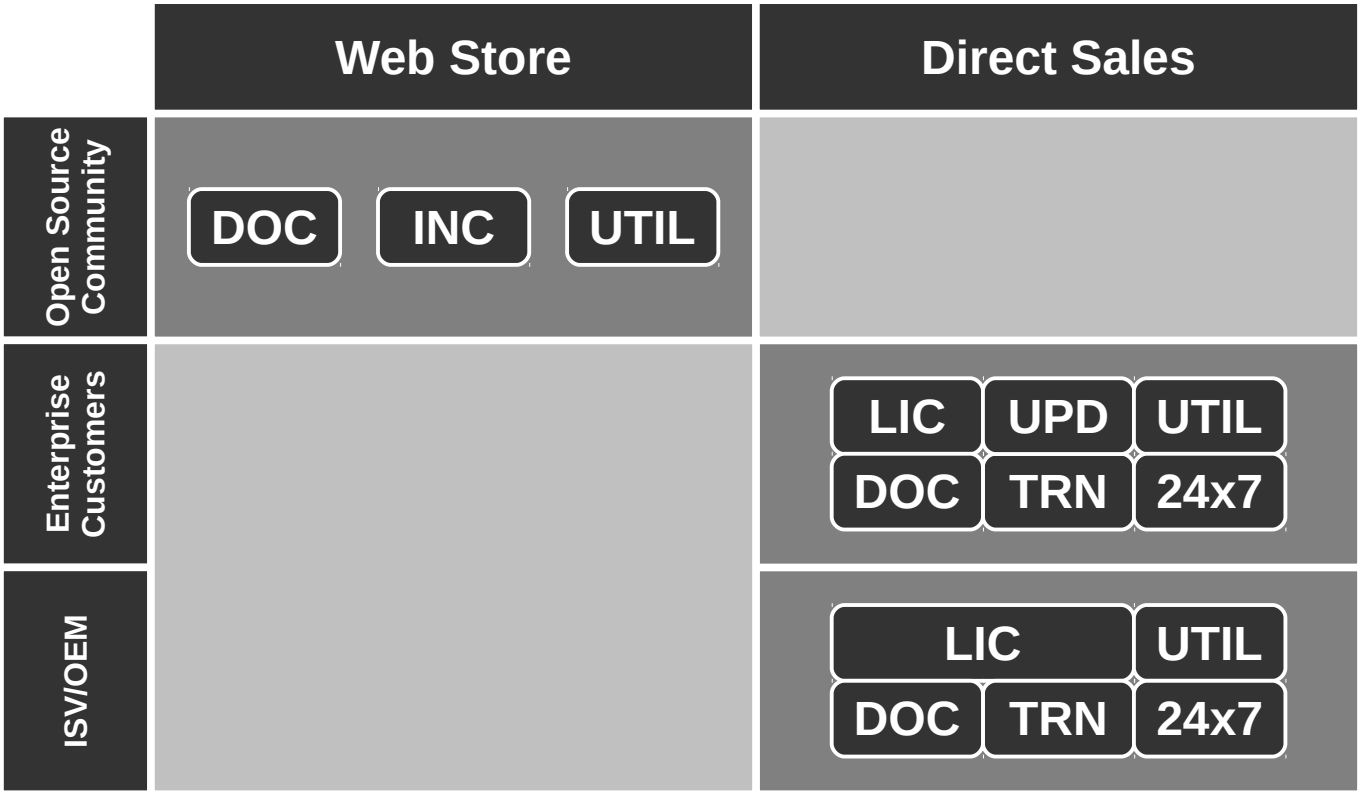
Consulting
- Technical implementation services
- Strategic solution consulting

Pricing of consulting
- Fixed fee
- Time and materials

Operations
- Provision of SaaS (managed service)

Pricing of operations
- Quantity: Users, resources, …
- Duration: Always time-limited
- Structured: Set-up, subscription

Commercial Open Source Products [WR13]



DOC Documentation

INC Incident-based support

UTIL Utilities

LIC Commercial license

UPD Update service

TRN Training

...

24x7 24x7 hot-line

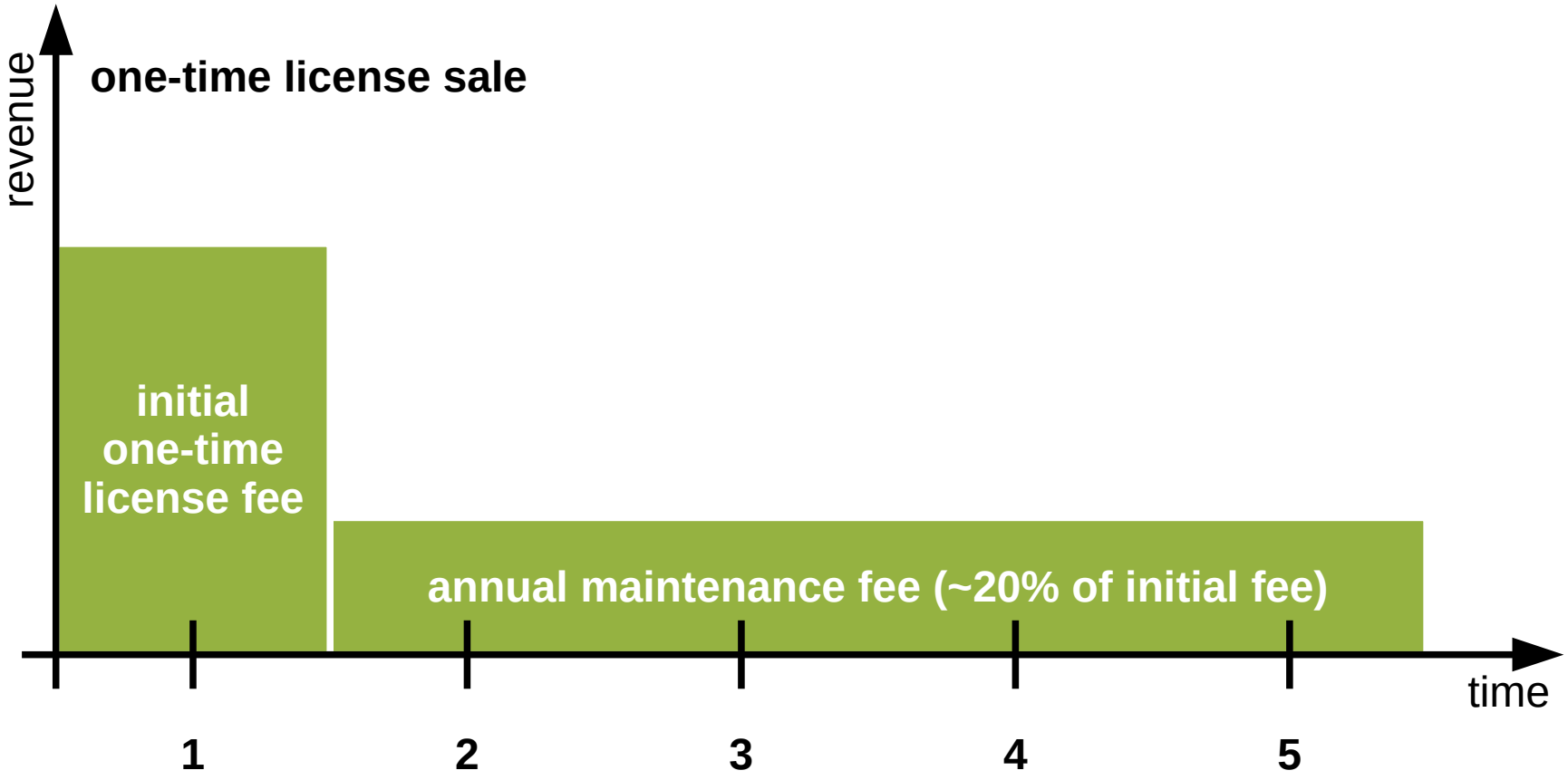
Enterprise Customers vs. Private Users

- Enterprise customers
  - Are willing to trade money for time
- Private users
  - Are willing to trade time for money

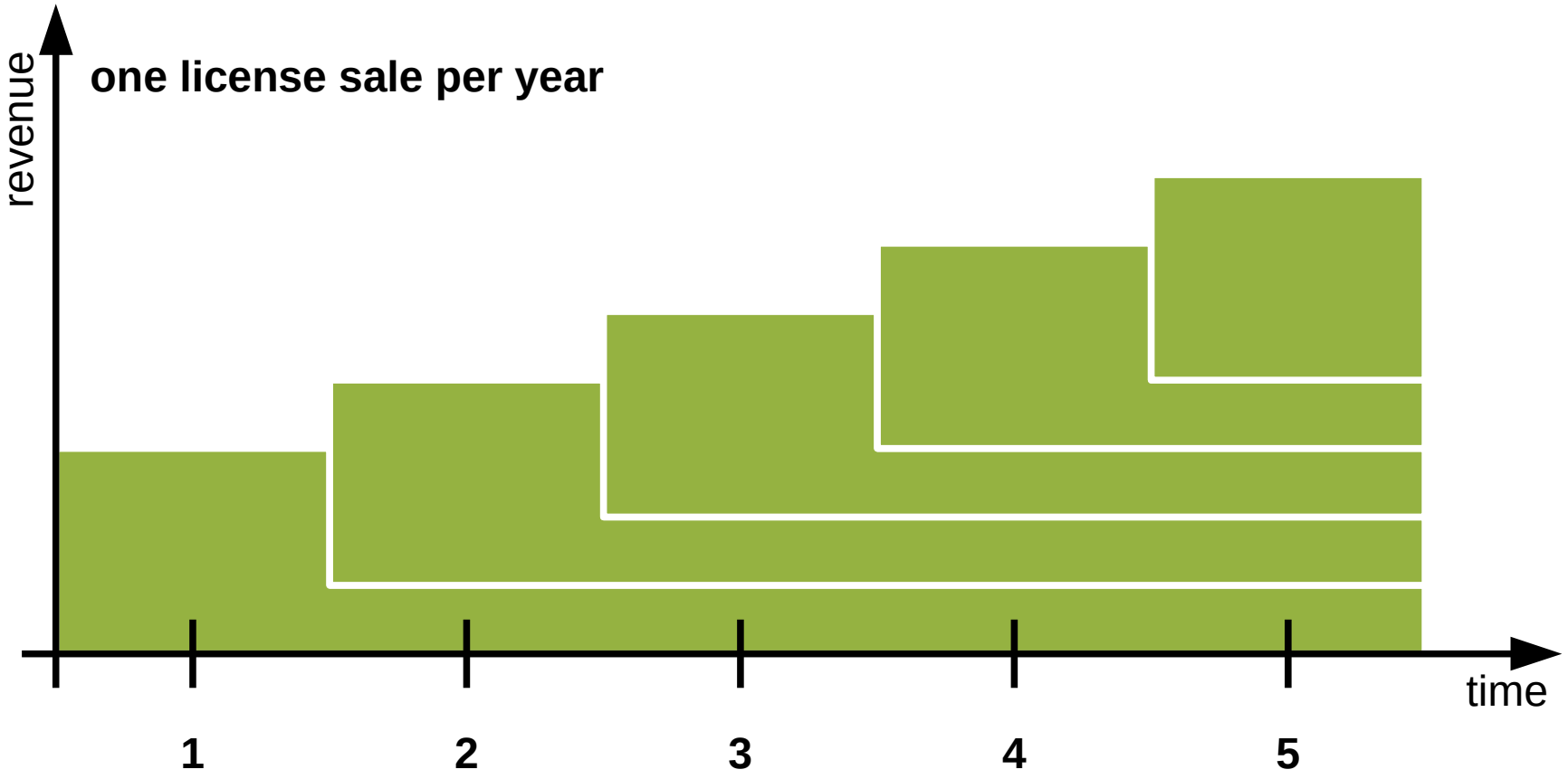
Products, Projects, and Services

- Products are provided by a software vendor
  - “Standardsoftware”, (commercial) off-the-shelf software (COTS)
- Products can be operated by service providers
  - Service providers specialize in specific products
- Projects are performed by consulting firms
  - “Individualsoftware”, custom software
- Many companies do all of the above

Single Product Sale Revenue



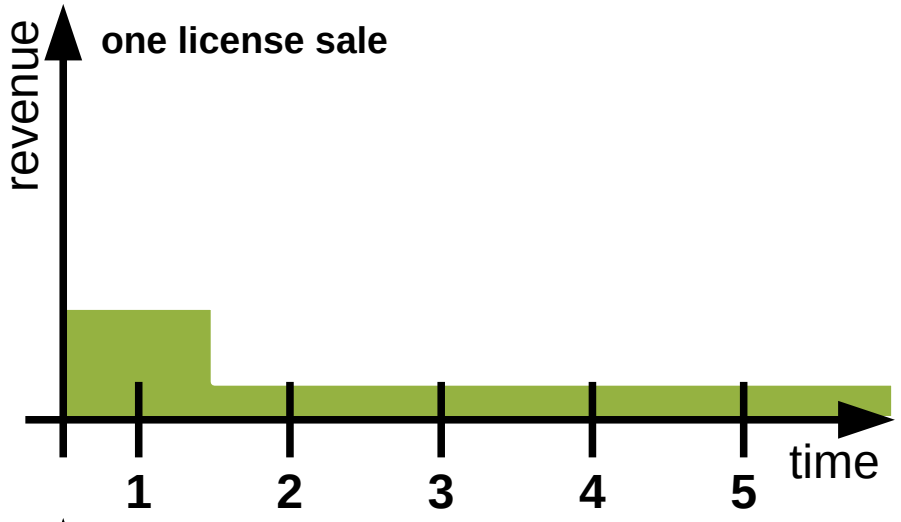
Accumulating Product Revenues (SaaS) [1]

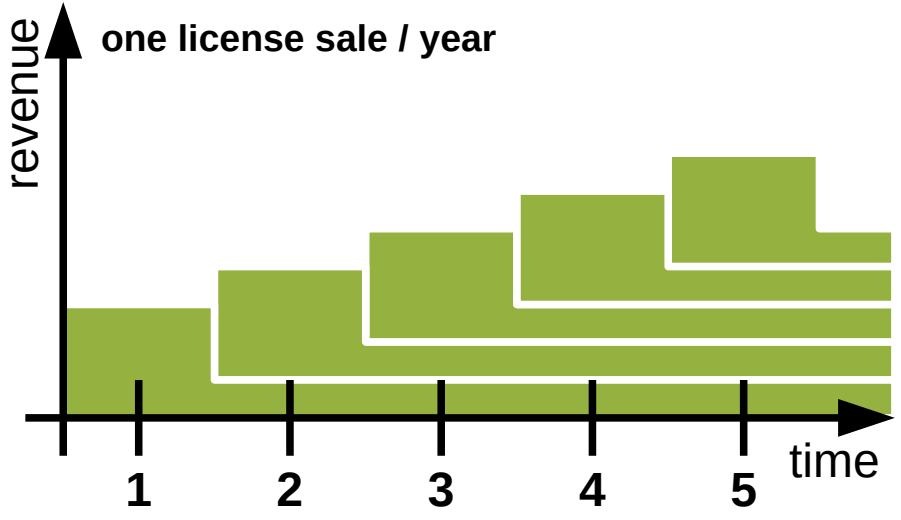


Software Projects

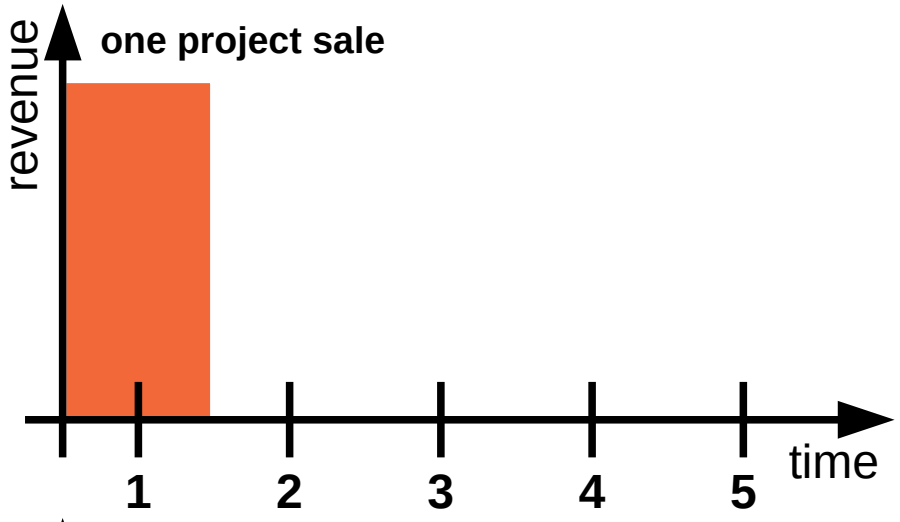
- Projects
  - A process with a defined start and a defined end
- Software projects
  - Revenues correlate with performed labor
    - Fixed price vs. actual labor
  - Accounted for as revenue and expenses
- Examples
  - Bachelor and Master theses
  - Customizing SAP for a customer

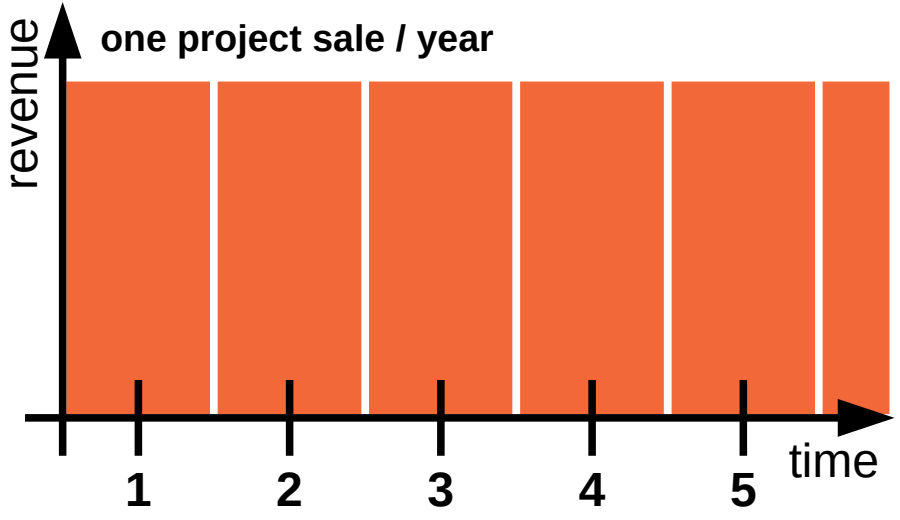
Product Revenue





Project Revenue





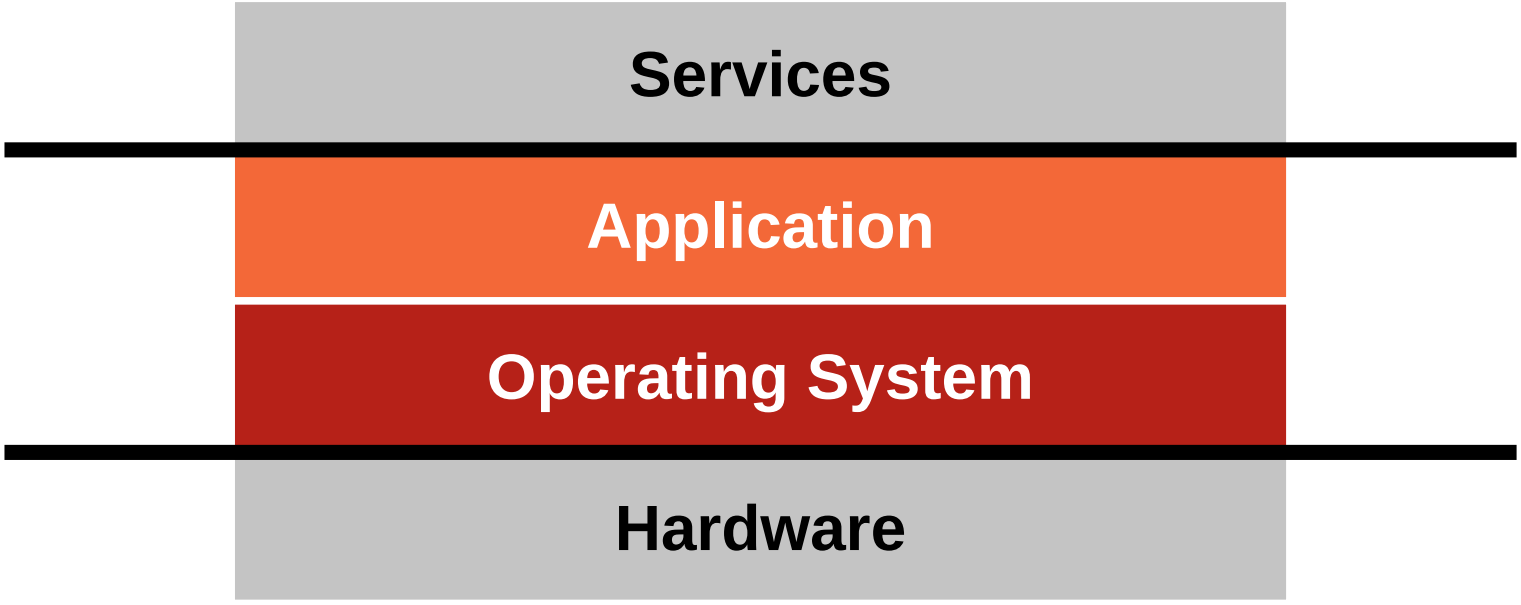
(Software) Products and (Implementation) Projects

Software Vendor	Product	Consulting Firm	Project
SAP	SAP Business One	accenture – High performance. Delivered.	Widget Corp. BI Impl. 2008
SUGARCRM COMMERCIAL OPEN SOURCE	SUGARCRM COMMERCIAL OPEN SOURCE	it-novum – Open-minded Business Solutions	German SME Sugar 2010
methodpark	stages	methodpark	Continental Stages 2010
Microsoft	Microsoft Office		

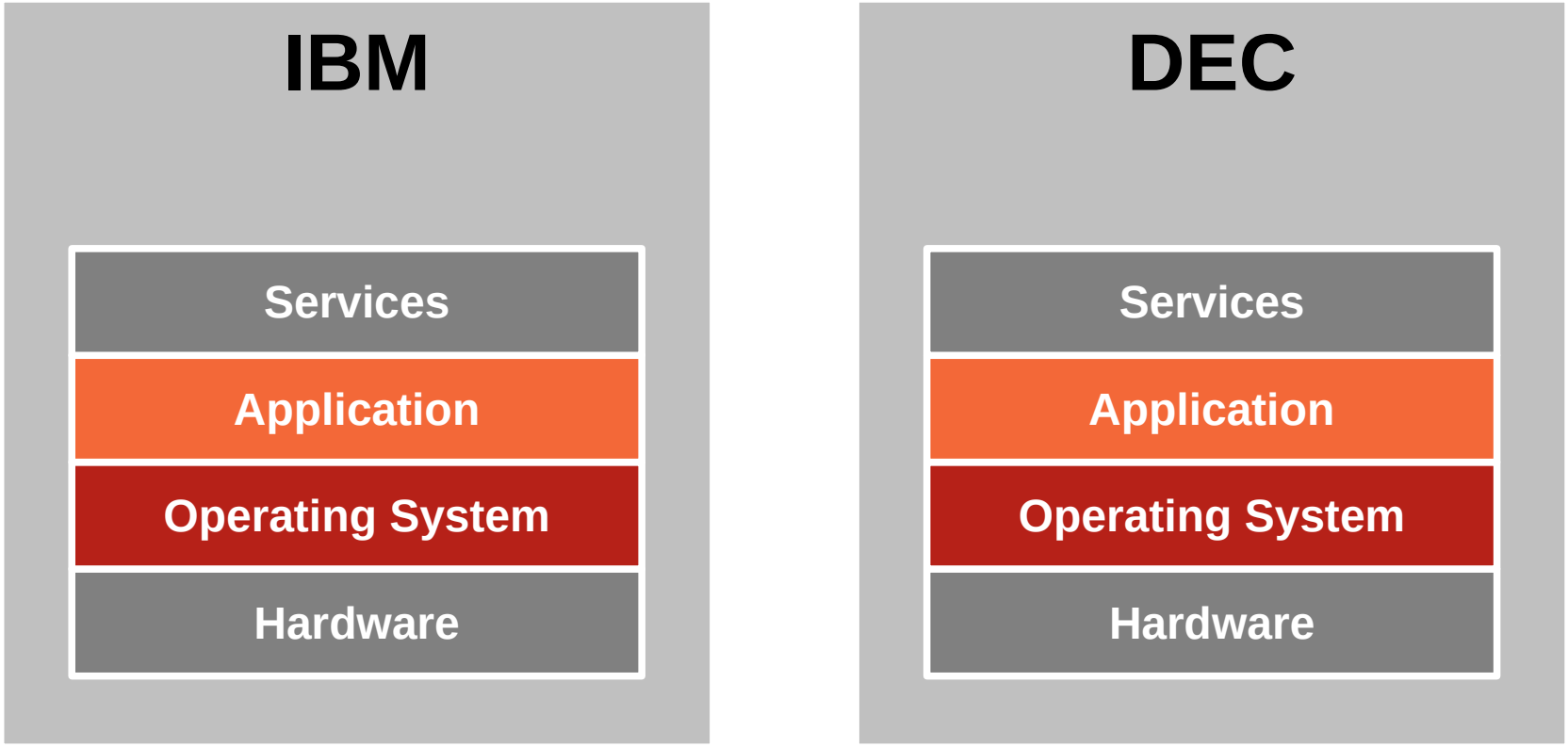
Software Product vs. Project Companies

	Consulting Firms (Custom Development)	Software Vendors (COTS Development)
Advantages	• Not capital intensive • Can be started easily	• Stable maintenance revenue • High market capitalization
Disadvantages	• Somewhat fragile revenue • Little long-term stability • High business volatility • Limited scalability	• Hard to get started • Requires upfront investment • May be slow to react • Most fail, few survive

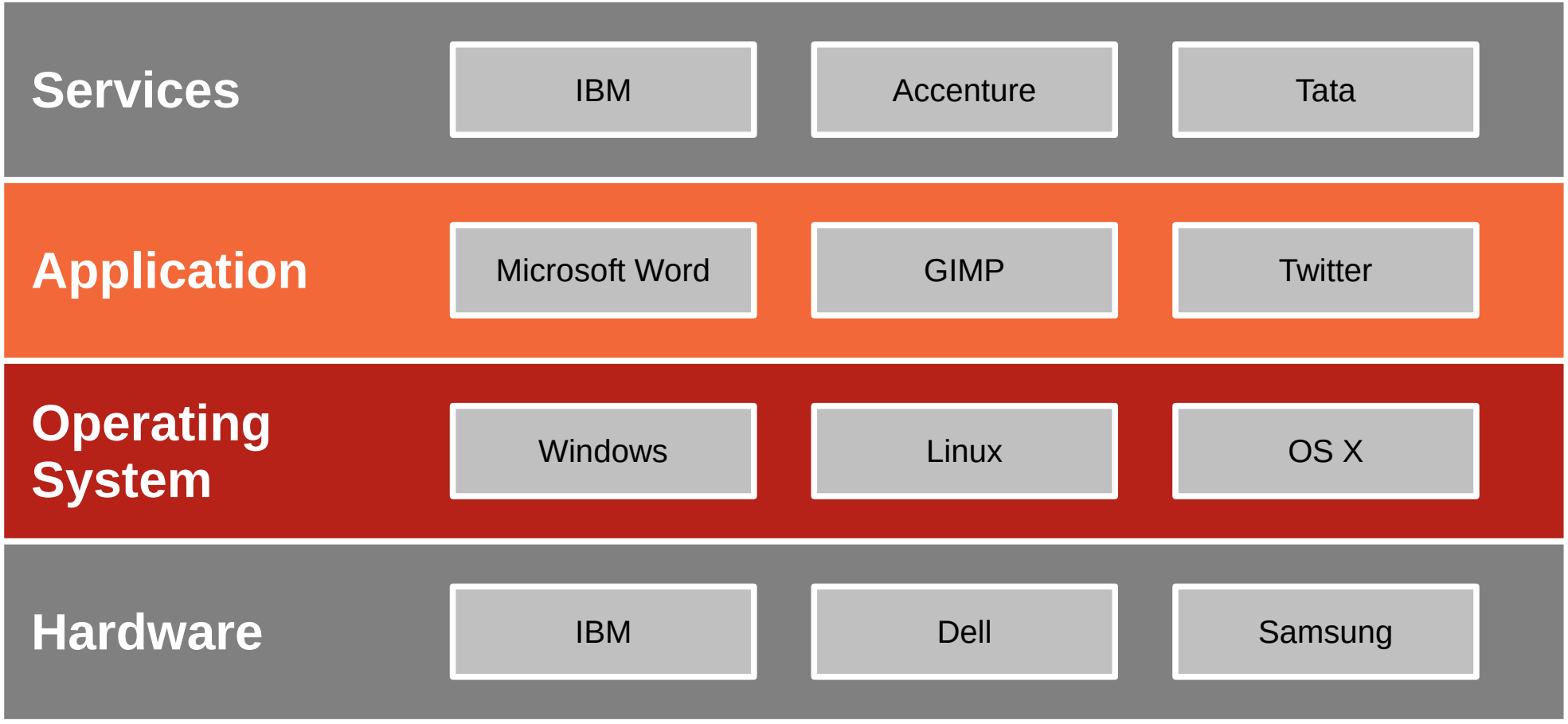
Customers Buy a “Solution”



Vertical Integration (Until 1980ties)



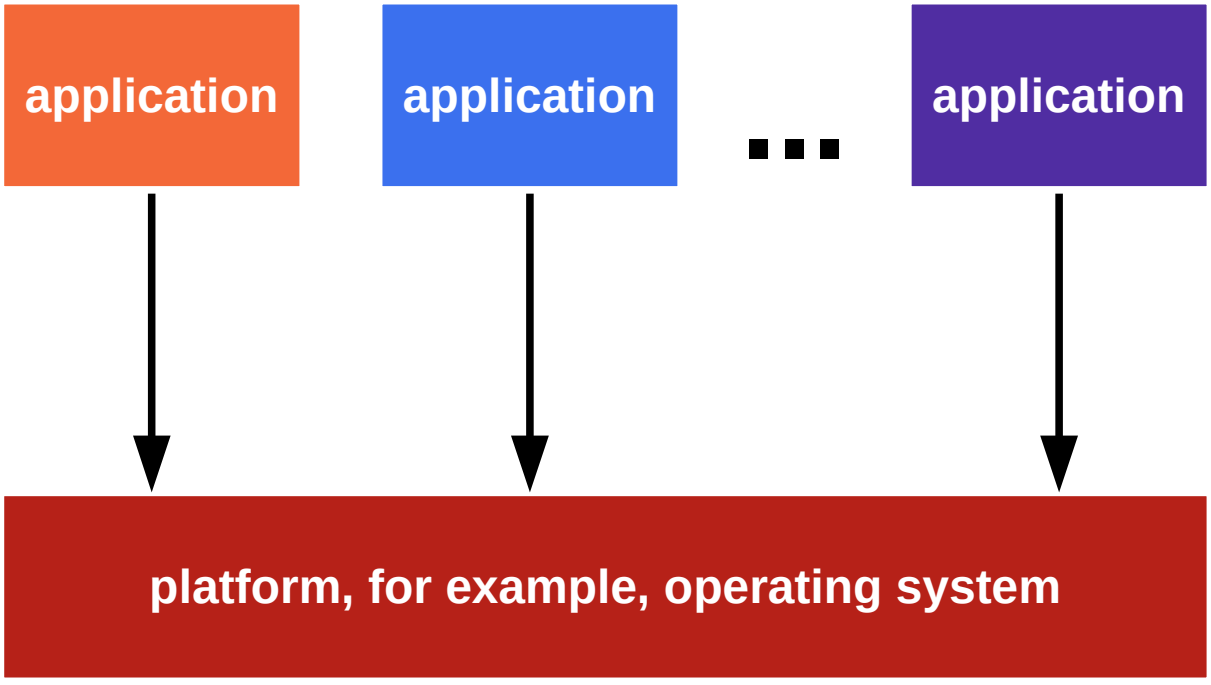
Horizontal Integration (Since 1990ties)



Categories of Software Products

- **Applications**
  - Software that is not built upon
  - Top-layer of the solution stack
- **Platforms**
  - Software that is built upon
  - Everything that is not the top layer
- **Why does everyone want to be a platform?**

Software Platform 1 / 2



Software Platform 2 / 2

- Software platform
  - Is an environment for the development and deployment of applications
    - Implies split between applications on top of the platform
  - Is a full set of application-independent life-cycle functions for applications
    - Among many components, the largest collection (i.e. not just a library)
- Customer (user) value of software platforms
  - By definition, a platform in itself is useless
  - Customer value is only created by applications

Software Platforms as a Product

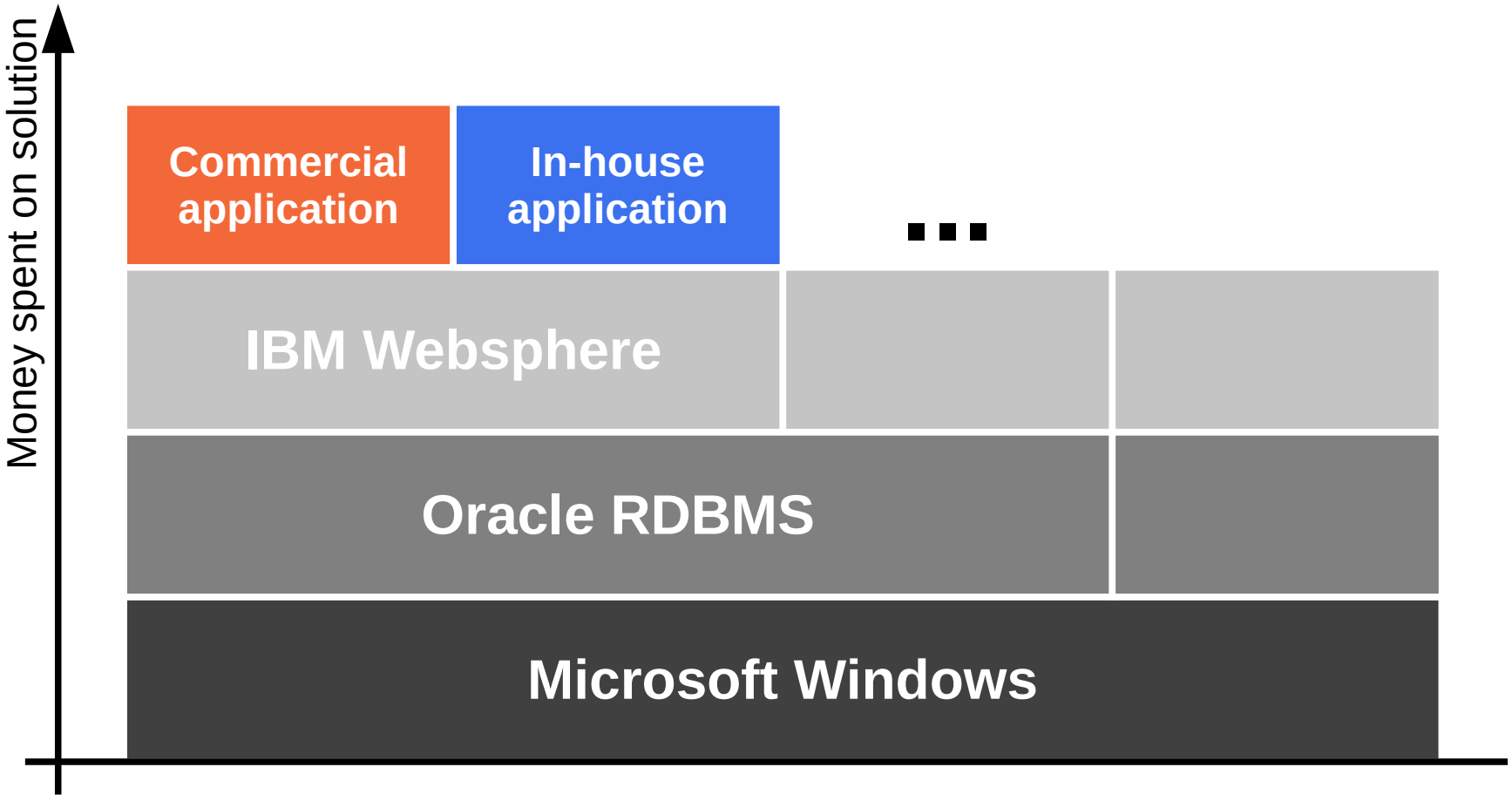
- Platforms are valuable
  - Platforms are needed by the applications running on top of it
  - Platforms can simplify IT department operations costs
- An application license sale implies a platform sale

Software Ecosystem

- Software ecosystem
  - The totality of actors (businesses and individuals),
  - software applications and components,
  - their relationships and goals
  - around a software platform
- Includes but is not limited to a community

Pricing Power 1 / 2

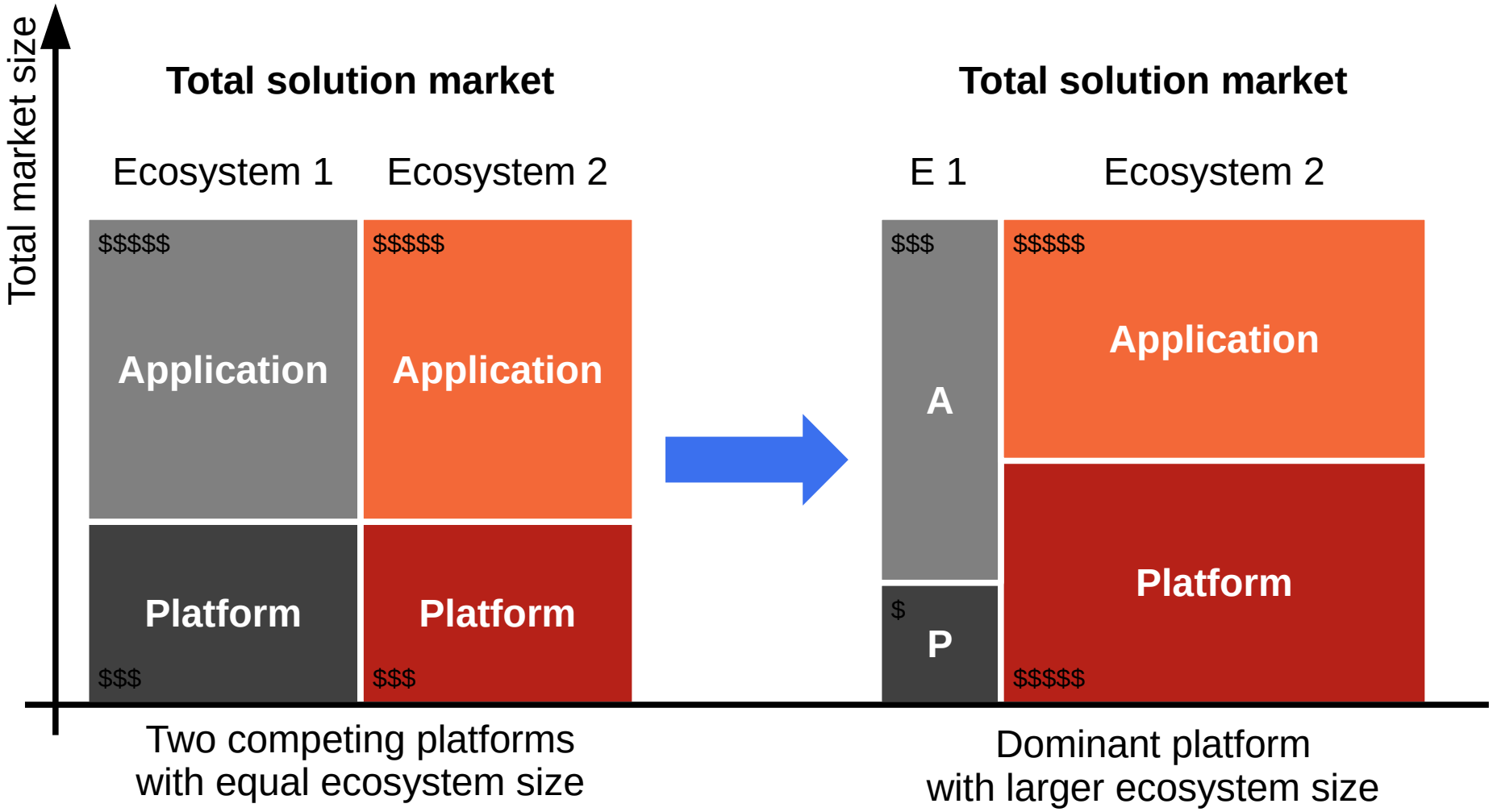
Pricing Power 2 / 2



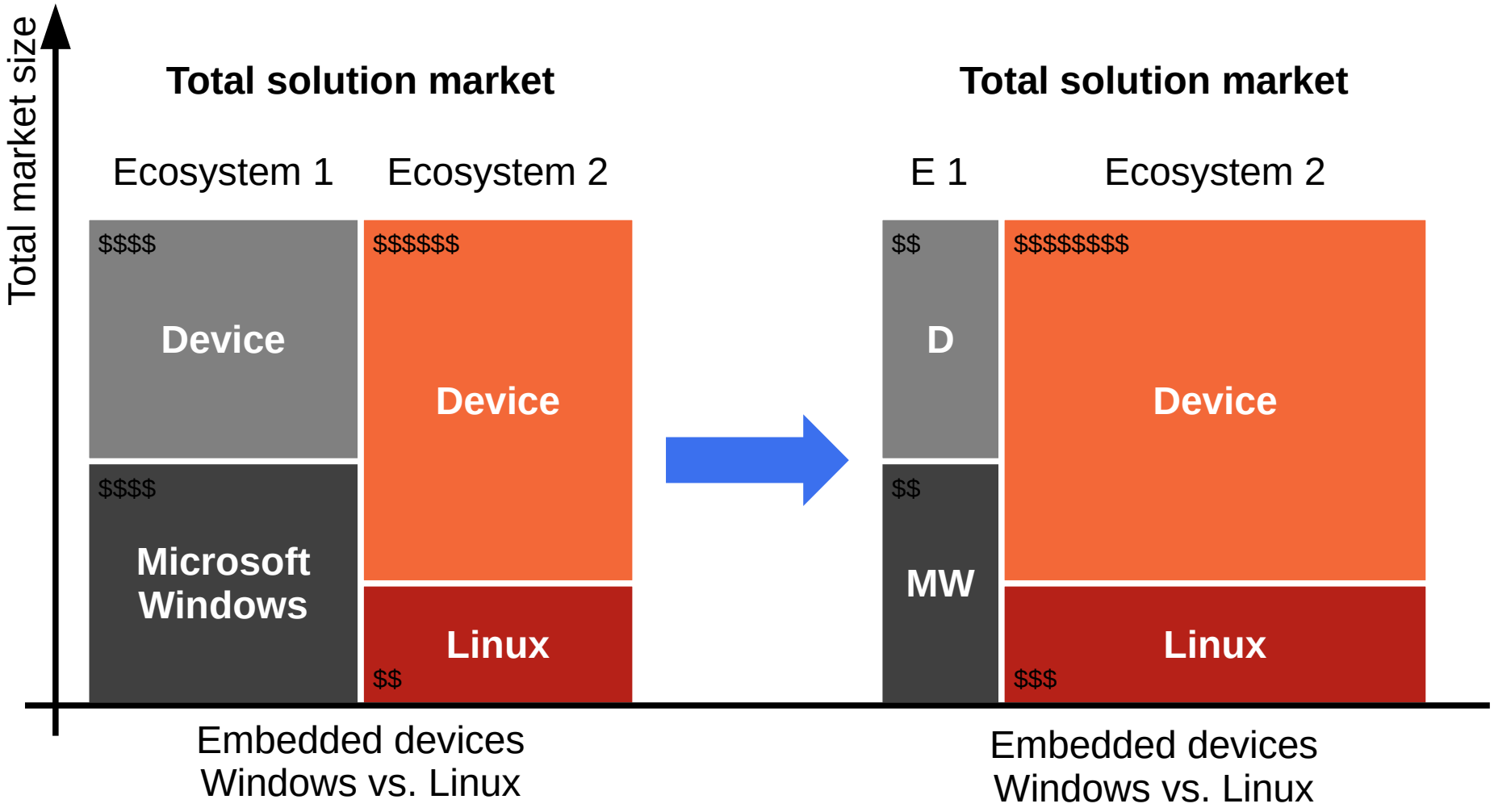
Software Ecosystem

- **Software ecosystem**
  - The totality of actors (businesses and individuals),
  - software applications and components,
  - their relationships and goals
  - for a software platform

The Software Ecosystem Wars

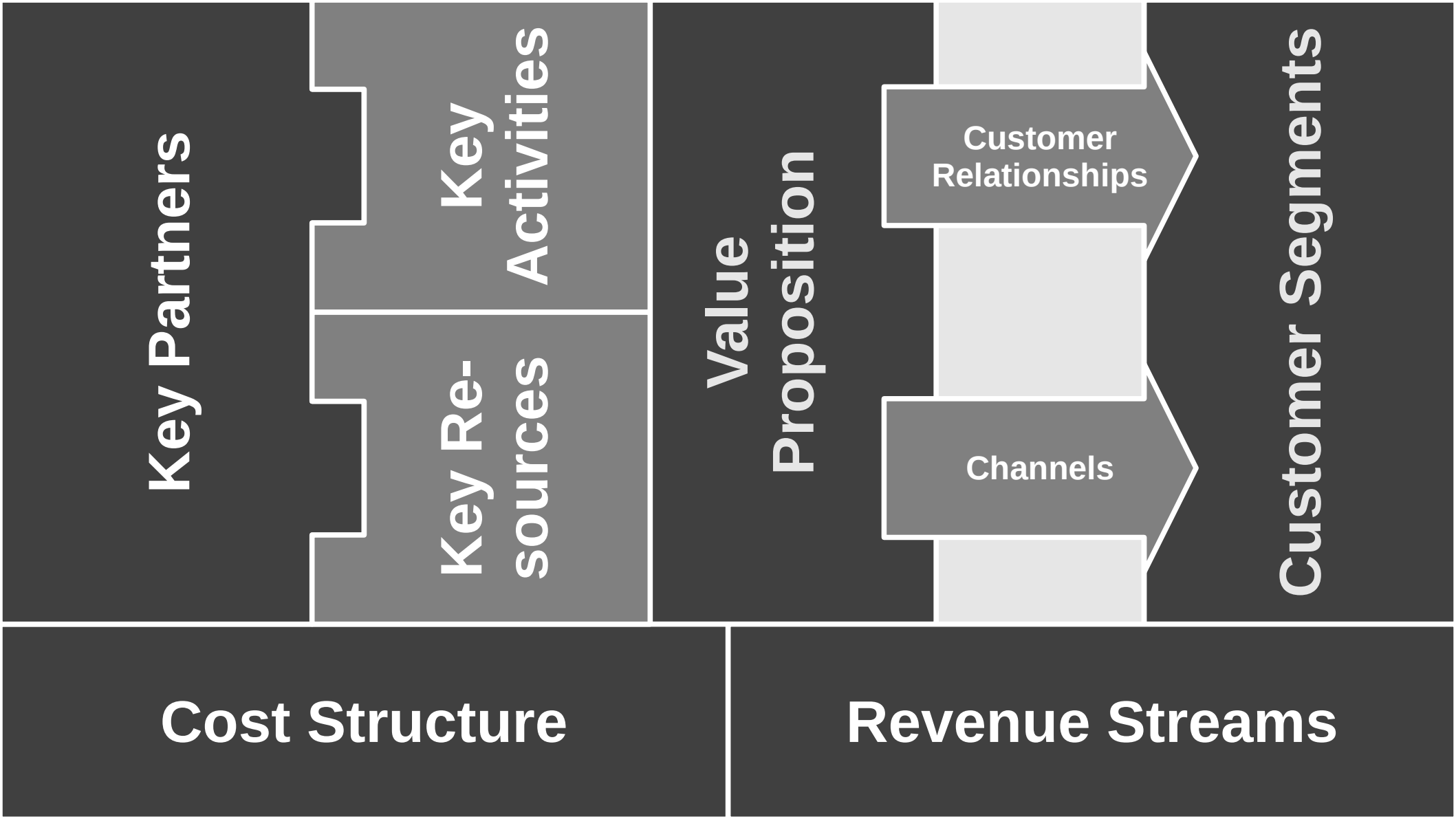


Open Source in the Ecosystem Wars



Business Model

- A **business model**
  - Is a summary description (model) of how a business' elements and their relationships interact to help the business achieve its strategic goals
  - Example elements are products, partners, people, positions, etc. and example relationships are the processes that govern their interaction
- But "open source is not a business model" [A08]
  - But open source can be a key enabler of a business model
  - So much so that the business model is called "open source"


Key Partners
Key Activities
Key Re-sources
Value Proposition
Customer Relationships
Channels
Customer Segments
Cost Structure
Revenue Streams

	2011 ($m)	Percentage
Revenues	$1.657	100%
Subscription and Support	$1.551	94%
Professional Services etc.	$106	6%
Cost of Revenues	$324	20%
Subscription and Support	$208	13%
Professional Services etc.	$116	7%
Gross Profit (and Gross Margin)	$1.333	80%
Operating Expenses		
Research and Development	$188	11%
Sales and Marketing	$792	48%
General and Administrative	$256	15%
Total Operating Costs	$1.236	74%
Operating Profit (and Operating Margin)	$97	6%

Source: Michael A. Cusumano. Reflecting on the Facebook IPO. CACM 10, 2012.

Open Source “Business Models”

- Non-profit open source
  - **Community projects** without foundation
  - Open source **developer foundations**
  - Open source **user foundations**
- For-profit open source
  - **Service and support firms**
  - Open source **distributor firms**
  - **Single-vendor** open source **firms**

Open Source and Business Models

- Open source may not be a business model, but it may be …
  - A go-to-market strategy
  - An innovation model
  - A collaboration model
  - A sourcing strategy
  - And many other things
- More on this in later lectures on open source business models

Review / Summary of Session

- The software industry
- Software platforms
- Software ecosystems
- Business models

Thank you! Questions?

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