A01

Course Introduction

2 Key Partners	**3** Key Activities	**1** Value Proposition	**3** Customer Relationships	**1** Customers (in Market) Segments
	2 Key Re-sources		**2** Channels	
3 Cost Structure		**1** Revenue Streams		

Key Partners

Key Activities

Key Re-sources

Value Proposition

Customer Relationships

Channels

Customers (in Market) Segments

Cost structure

Revenue Streams

A03
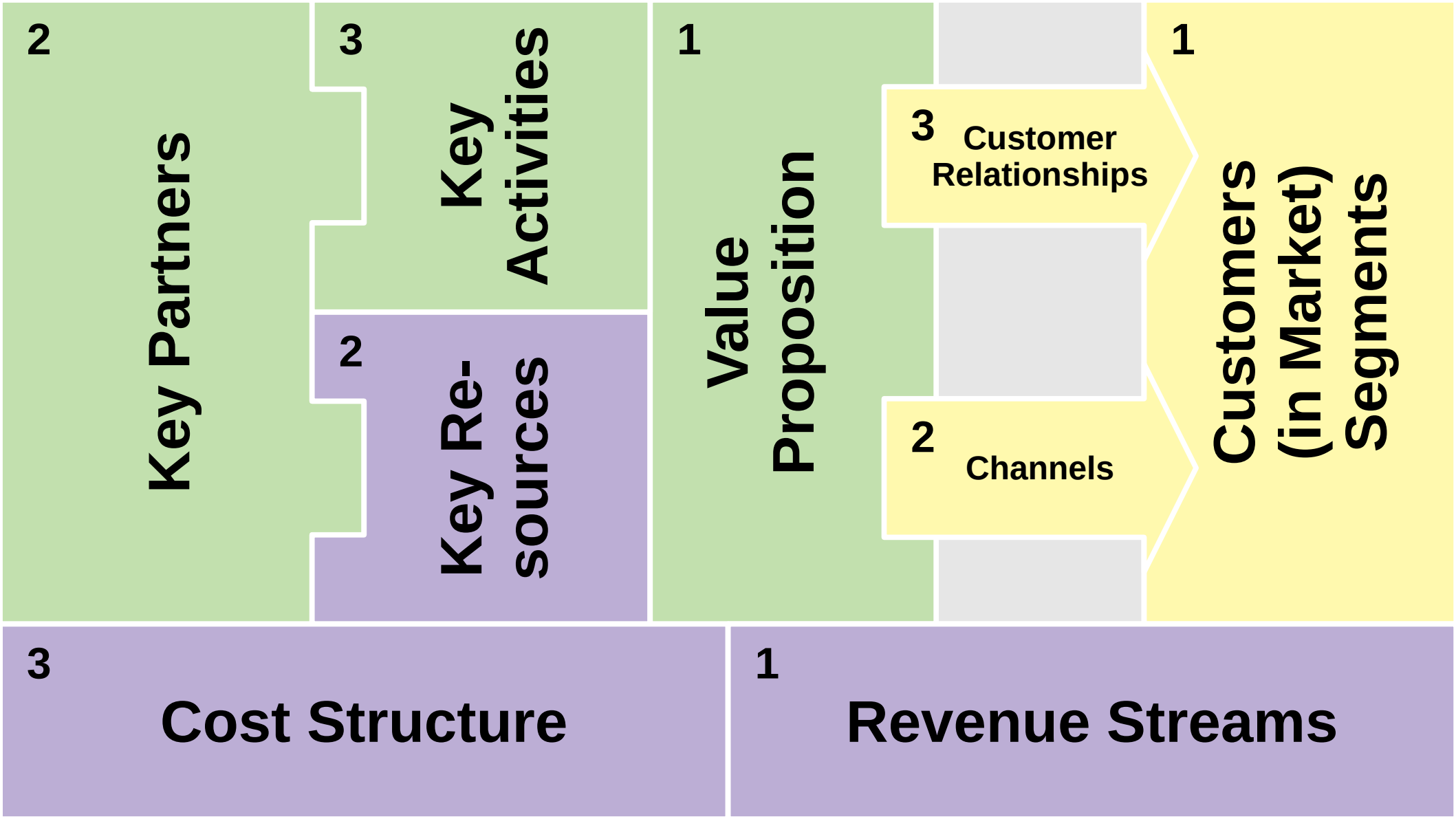
The Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relation-ships	Customers (in Market) Segments
	Key Resources		Channels	
Cost Structure			Revenue Streams	

B01

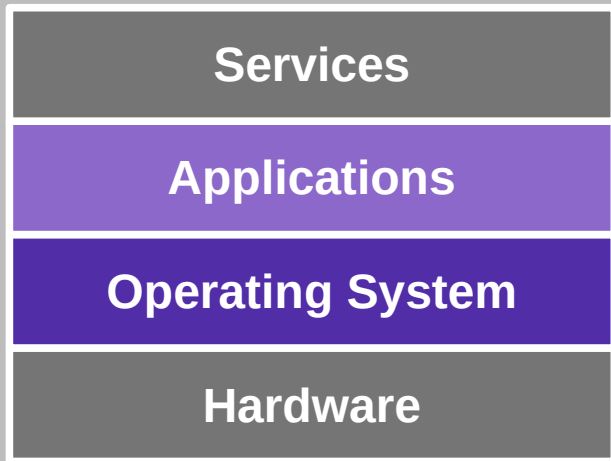# The Software Industry
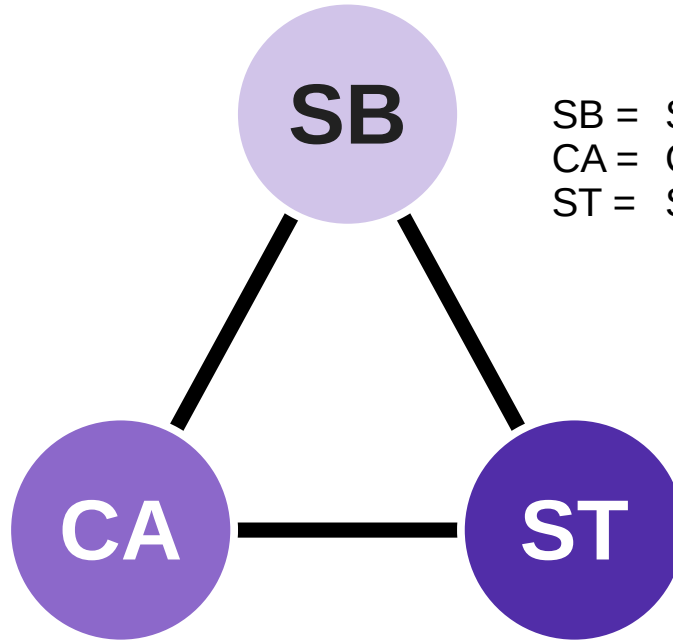
SB = Standards body
CA = Certification agency
ST = Standards trainer

IBM

Services
Applications
Operating System
Hardware

DEC

Services
Applications
Operating System
Hardware
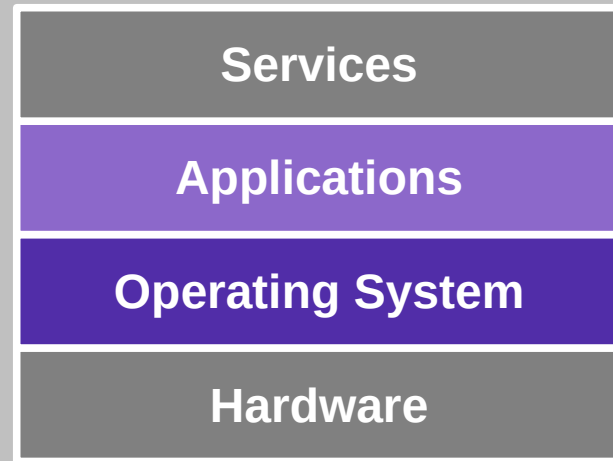
Services	IBM	Accenture	Tata
Application	Microsoft Word	GIMP	Twitter
Operating System	Windows	Linux	OS X
Hardware	IBM	Dell	Samsung

	AWS		Google
SaaS			**Apps**
PaaS	**Platform Services**		**Platform Services**
IaaS	**Operating System**		**Operating System**
	Hardware		**Hardware**

Total market

Addressable market

Serviced market
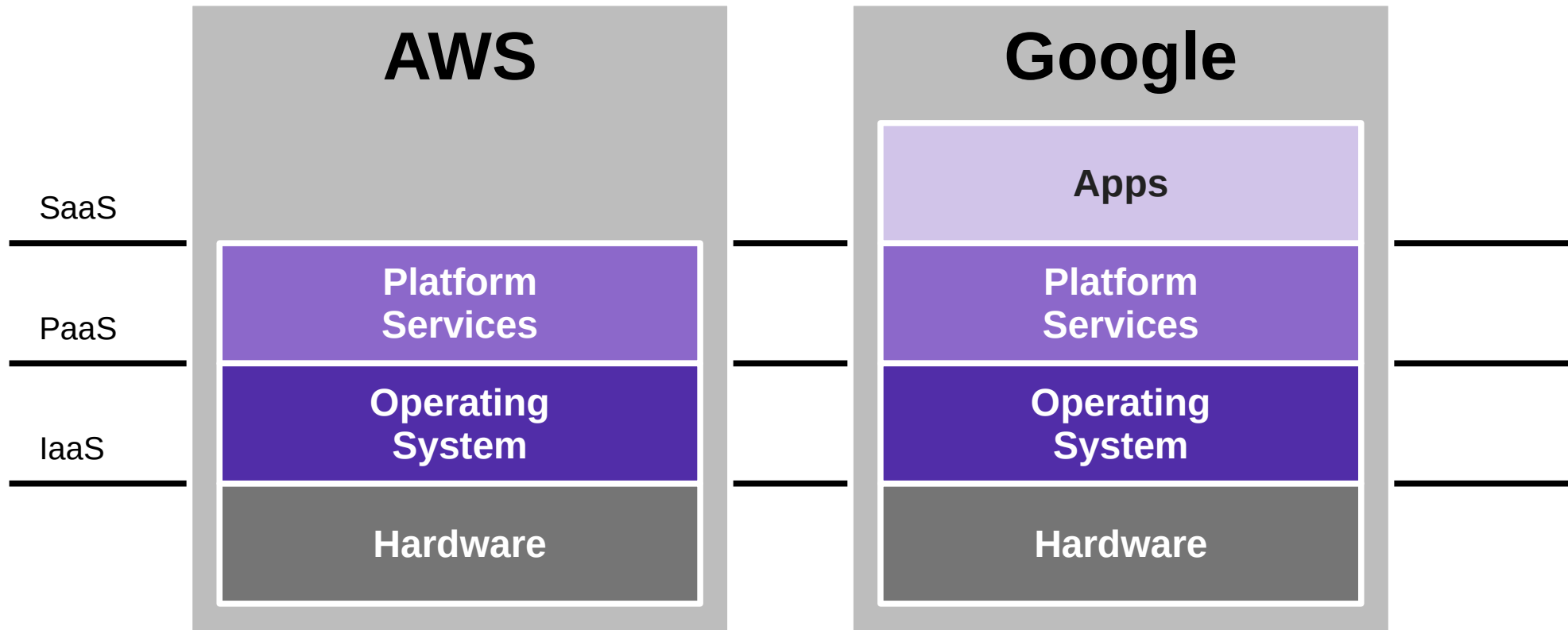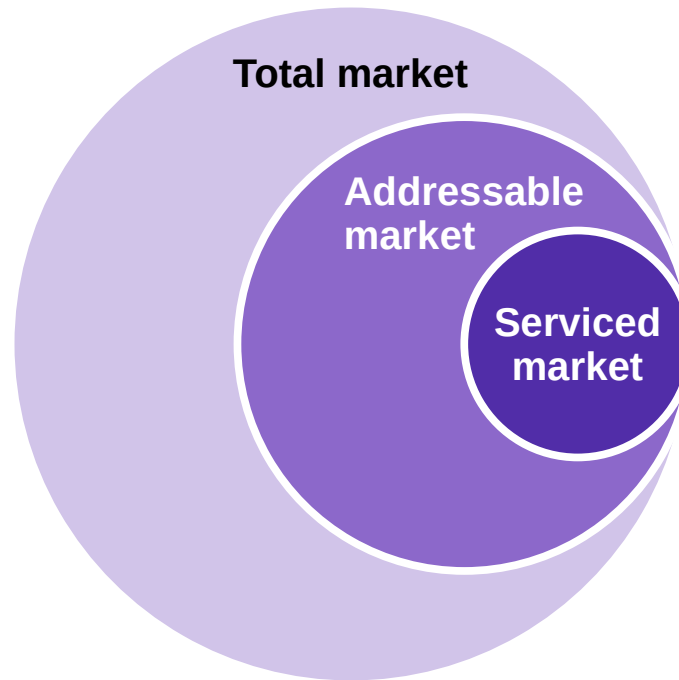
- Child
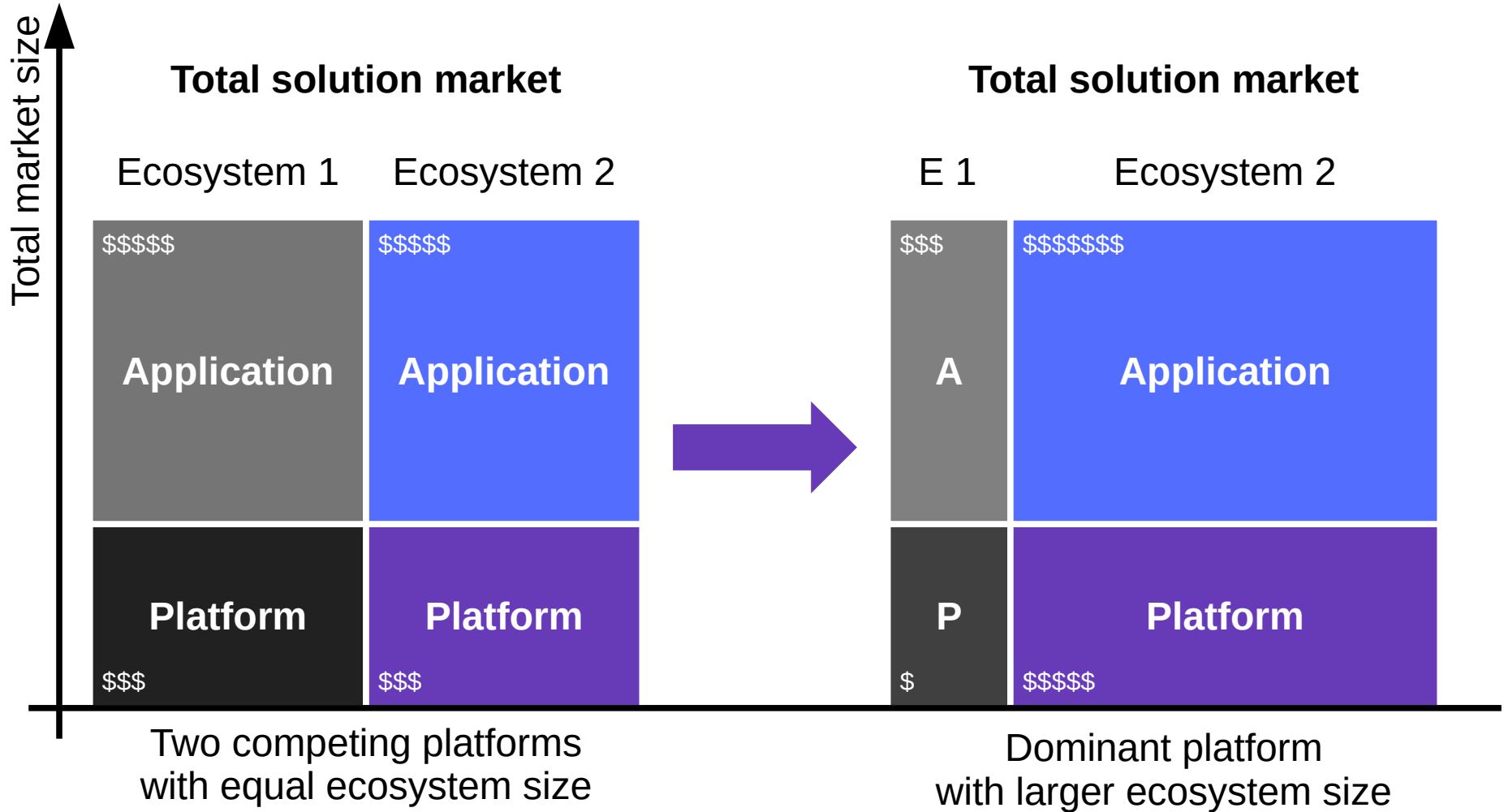- Teenager
- Single adult
- Married no kids
- Parent

	Healthcare	Banking	Insurance	Energy	Automotive	...
CRM						
SRM						
ERP						
HRM						
...						

Total market size

Total solution market

Ecosystem 1   Ecosystem 2

$$$$ | $$$$$

Application | **Application**

Platform | **Platform**

$$$ | $$$

Two competing platforms
with equal ecosystem size

Total solution market

E 1   Ecosystem 2

$$$ | $$$$$$

A | **Application**

P | **Platform**

$ | $$$$

Dominant platform
with larger ecosystem size

B02

Software Products

Whole product

Basic product

Core product (intellectual property)

Software
- Core software
- Additional software (extensions + plug-ins, tools and utilities, 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 subscription fee

Guarantees ("insurance")
- Fitness for use
- Certification

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
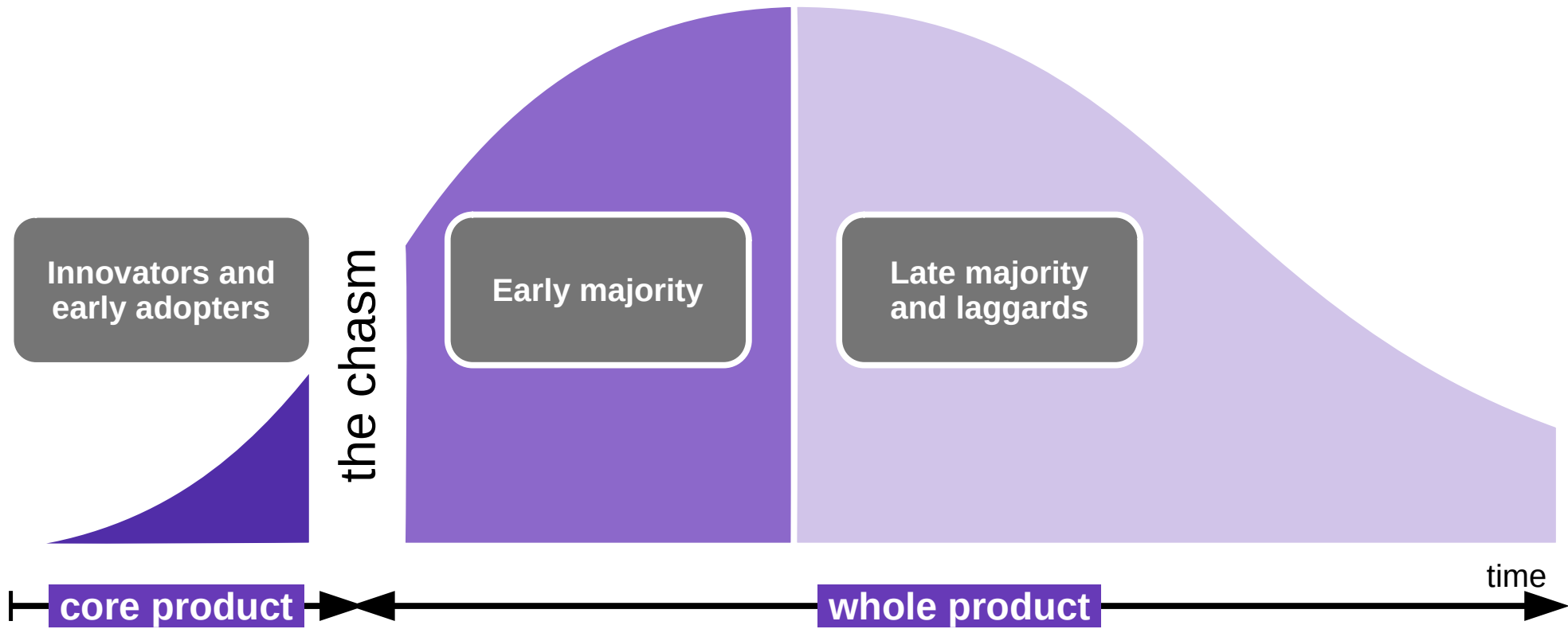
Pricing of consulting
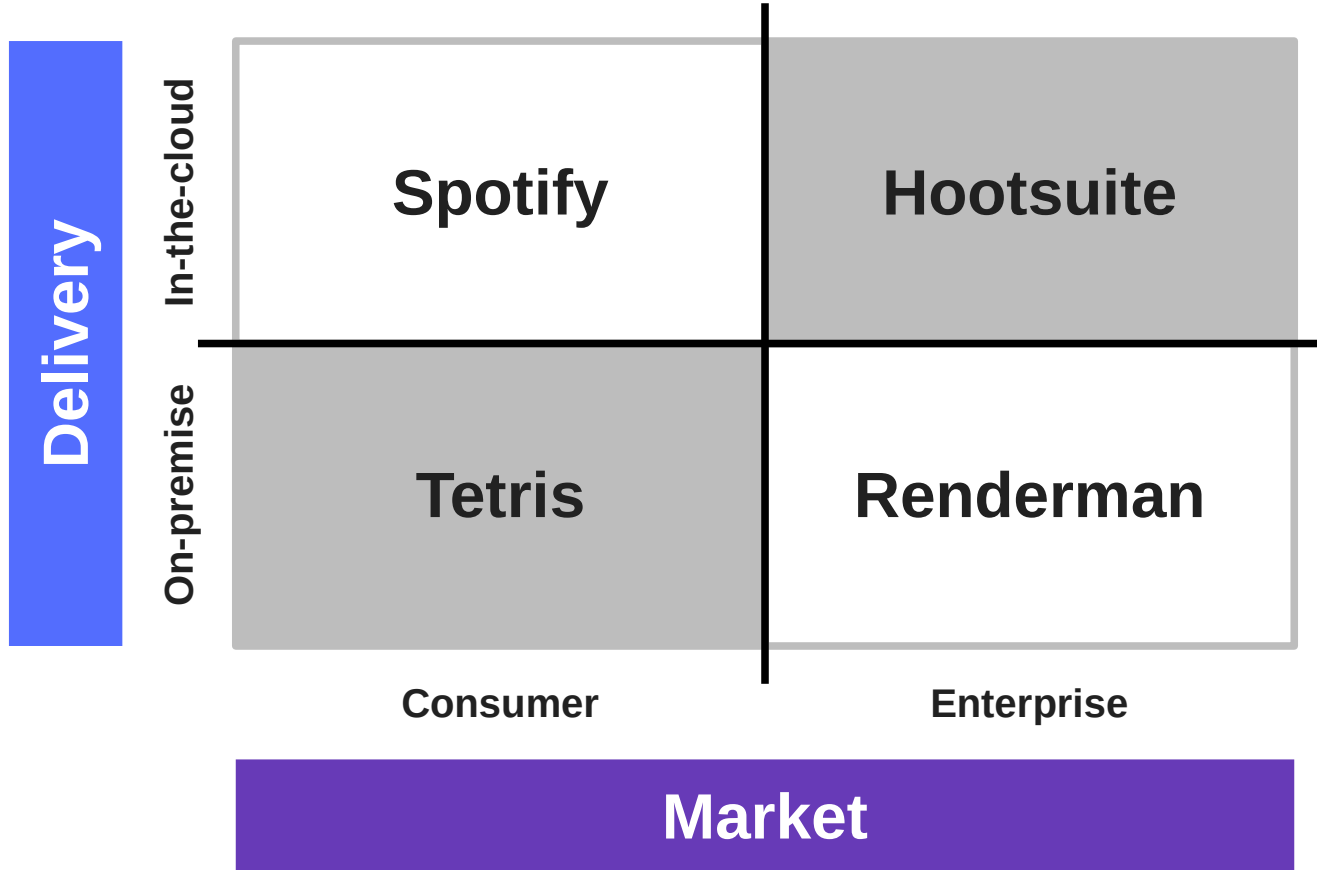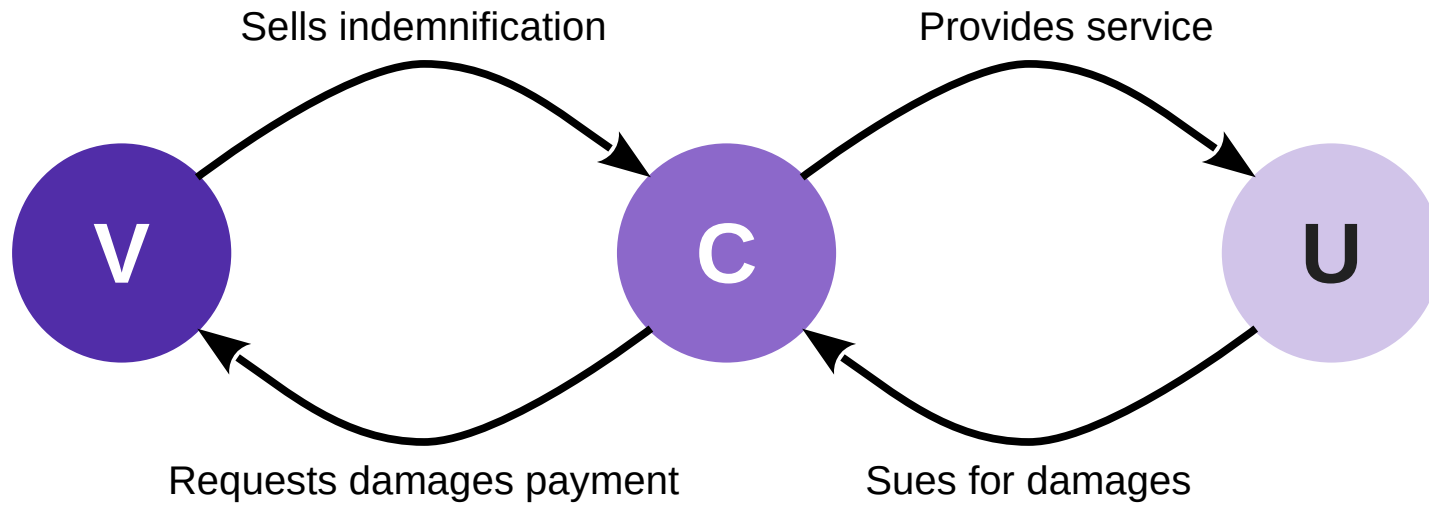- Fixed fee
- Time and materials
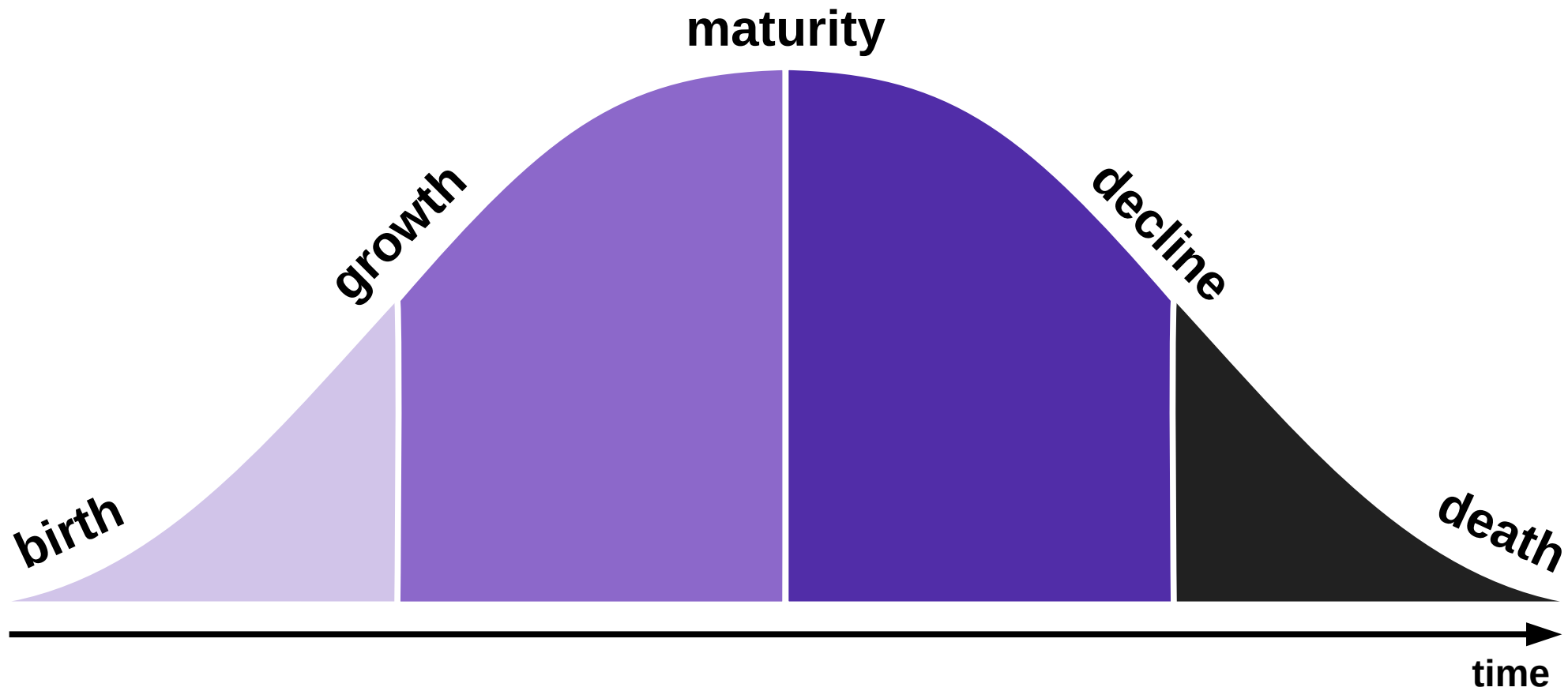
Operations
- Provision of SaaS (managed service)

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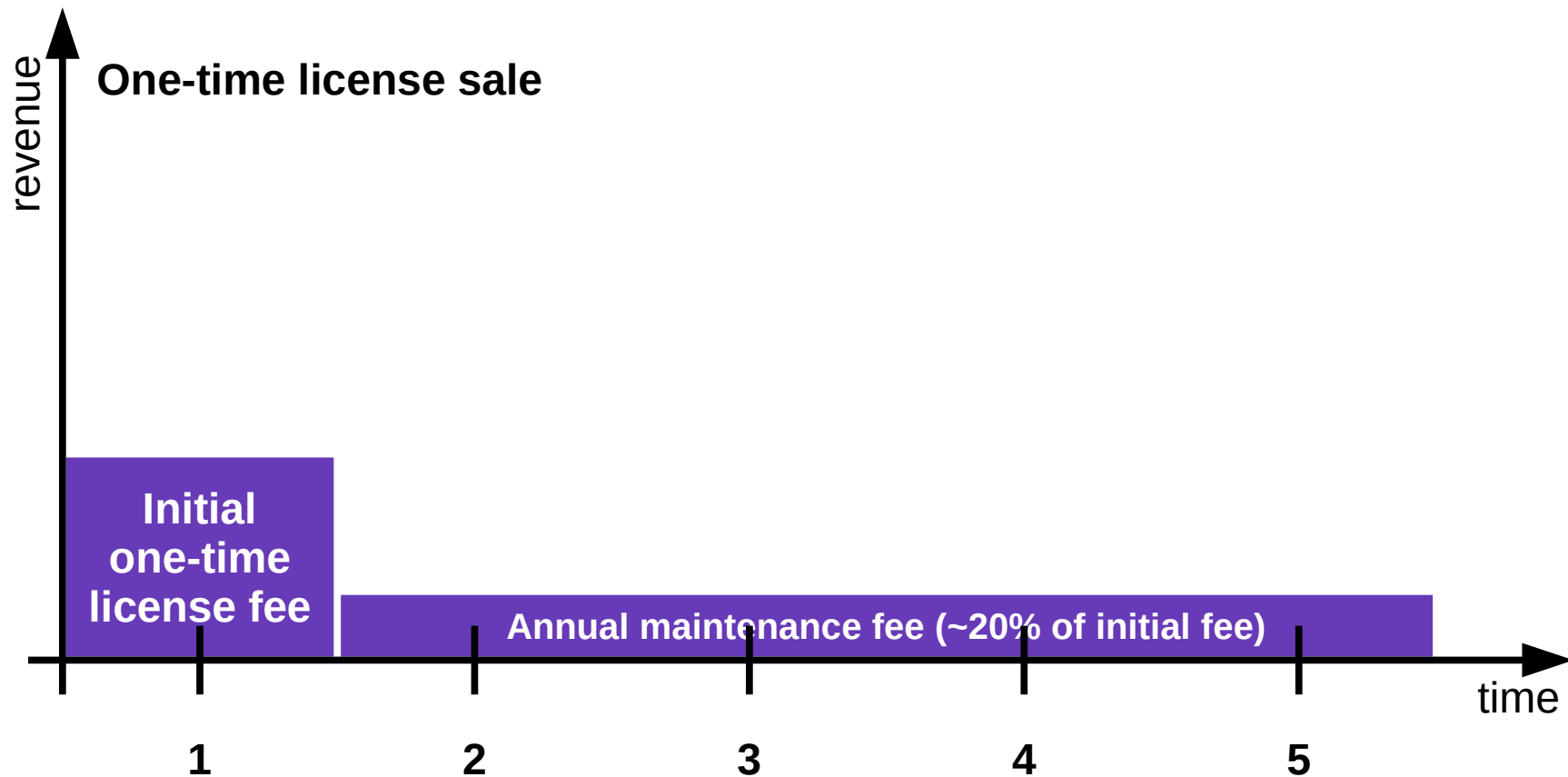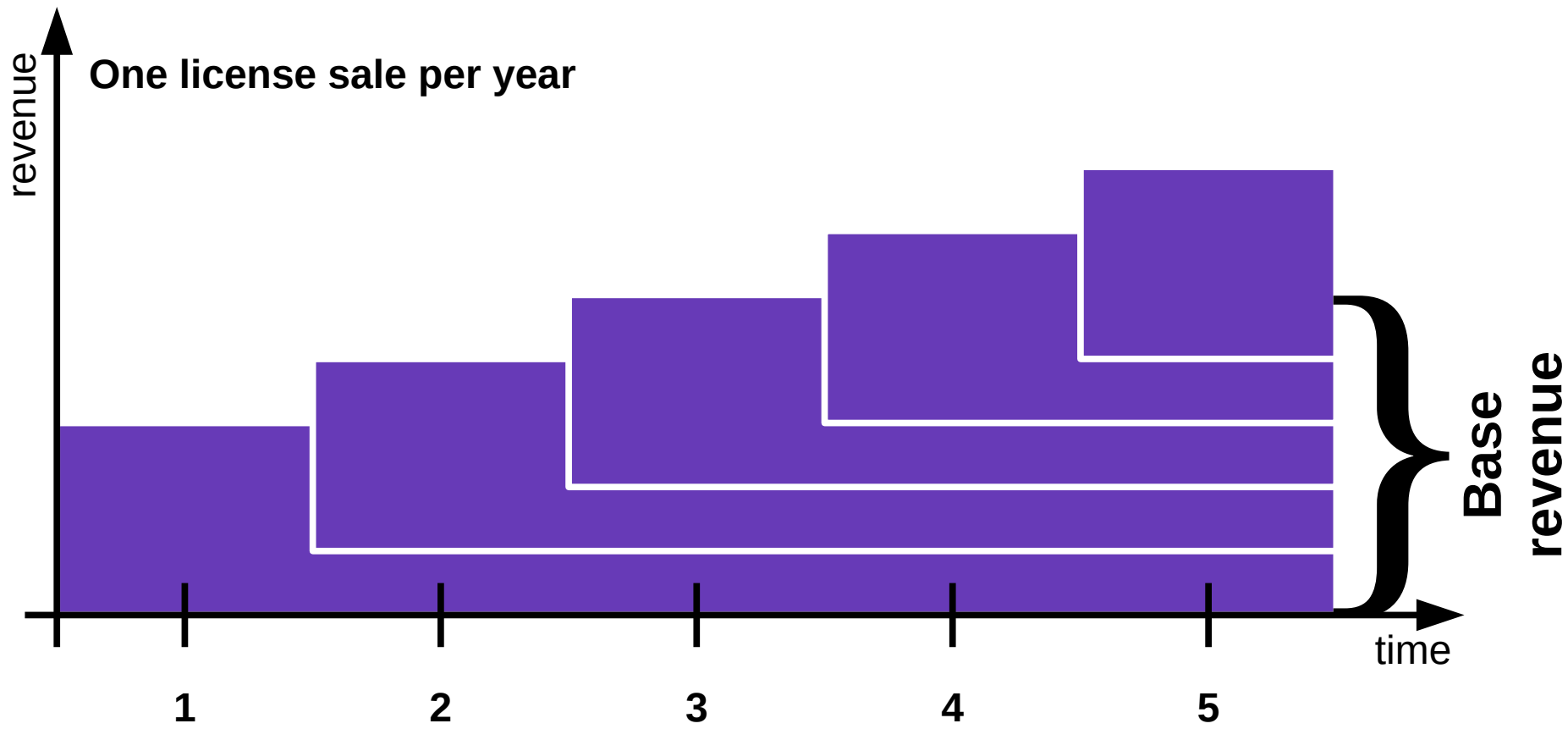- Duration: Always time-limited
- Structured: Set-up, subscription

Innovators and early adopters
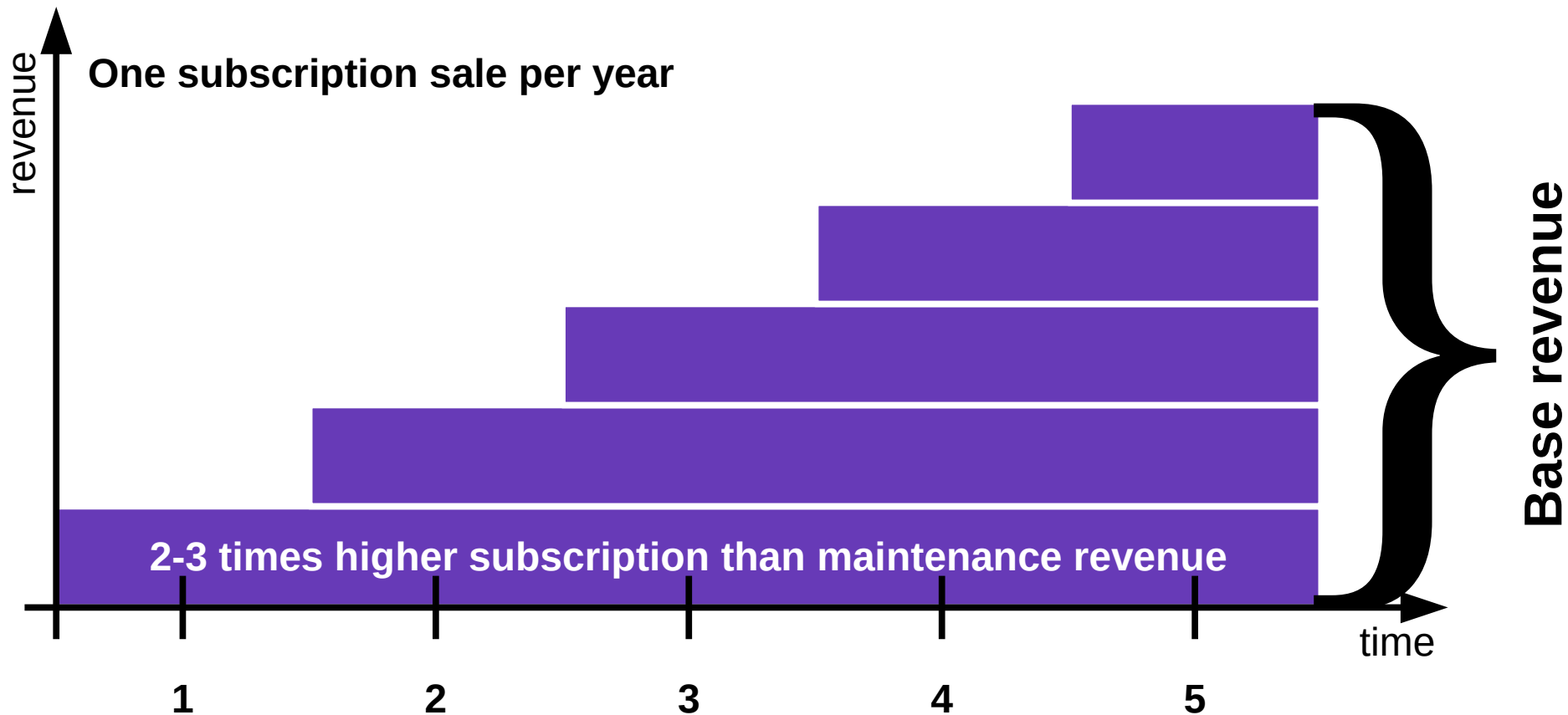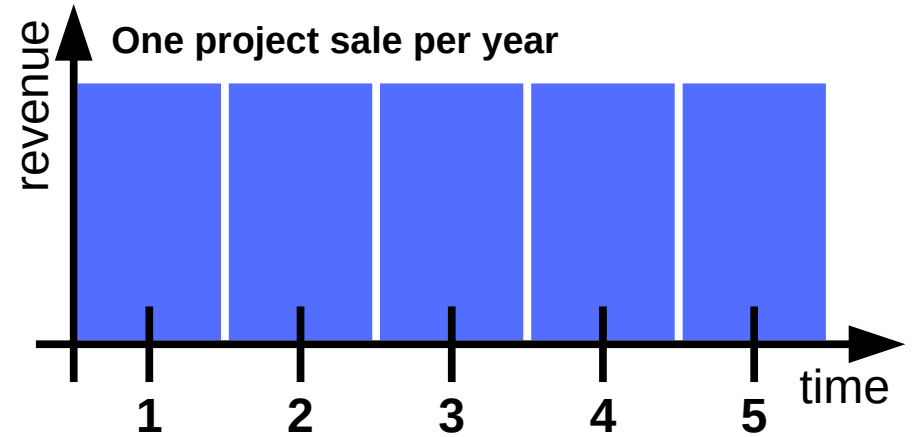
the chasm

Early majority

Late majority and laggards

time

core product

whole product

Delivery

In-the-cloud

Spotify

Hootsuite

On-premise

Tetris

Renderman

Consumer

Enterprise

Market

V

C

U

Sells indemnification

Provides service

Requests damages payment

Sues for damages

B03

Software Vendors

One license sale per year

revenue

time

1   2   3   4   5

Base revenue

One subscription sale per year

revenue

2-3 times higher subscription than maintenance revenue

time

1   2   3   4   5

Base revenue

One license sale

revenue

time

1   2   3   4   5

One project sale

revenue

time

1   2   3   4   5

One license sale per year

revenue

time

1   2   3   4   5

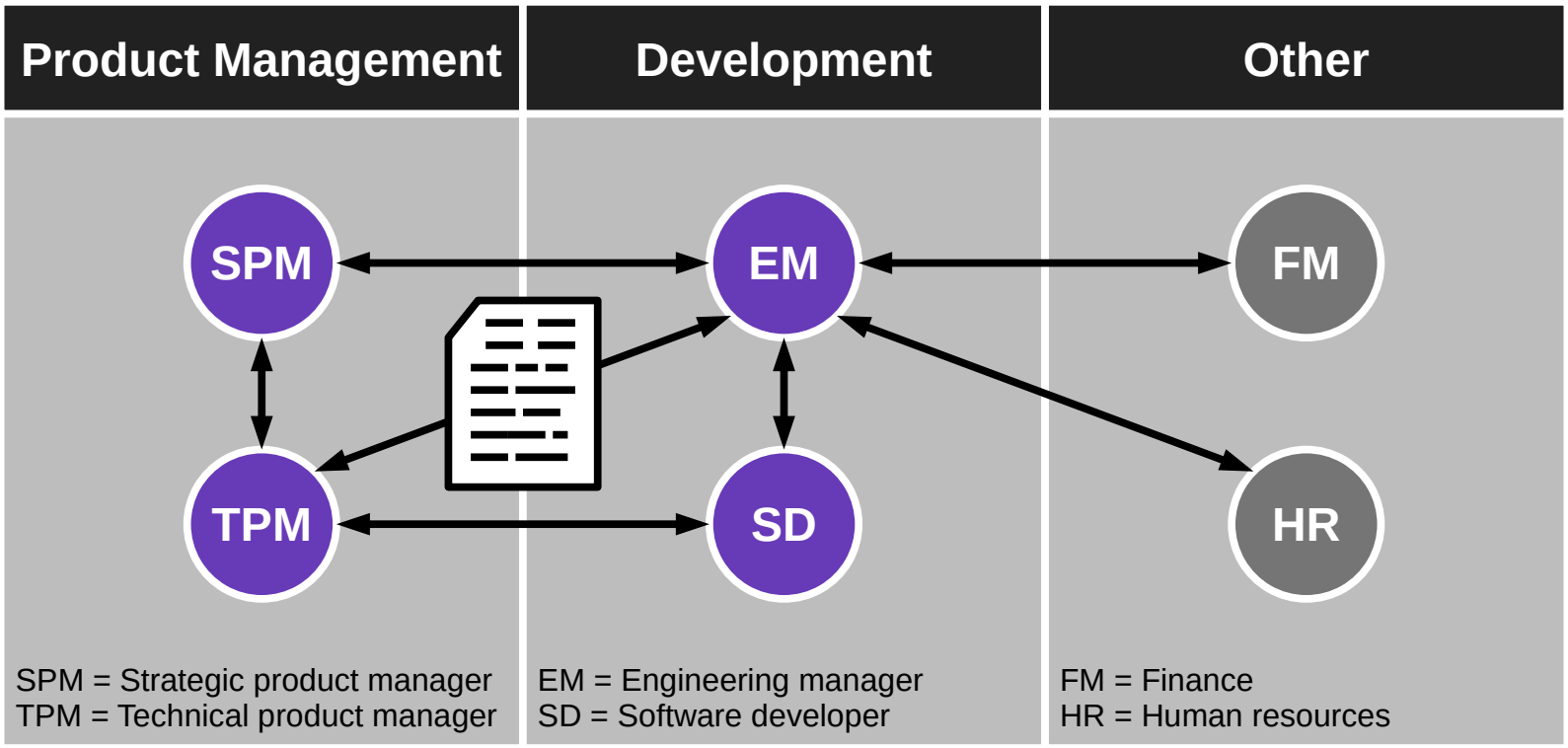**One project sale per year**
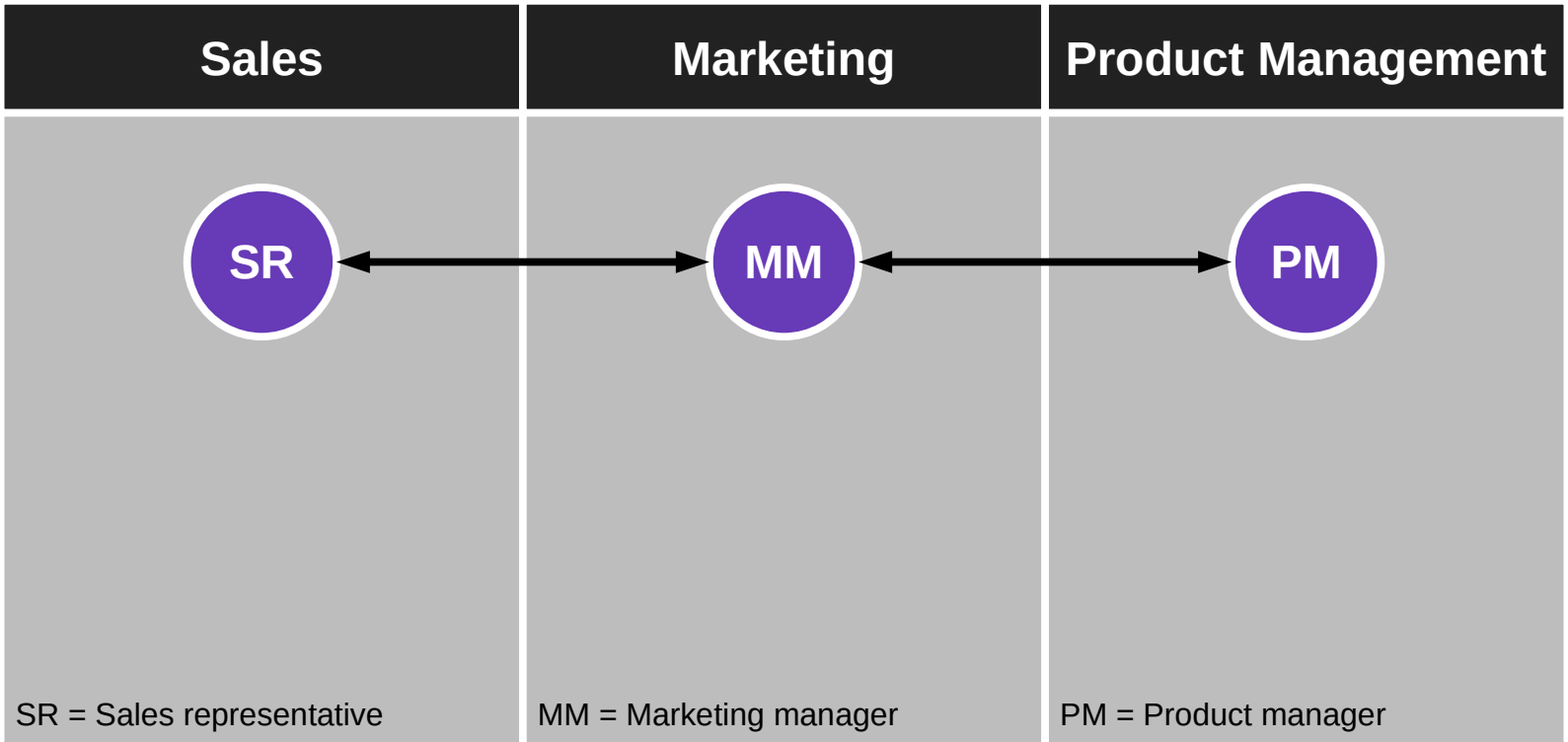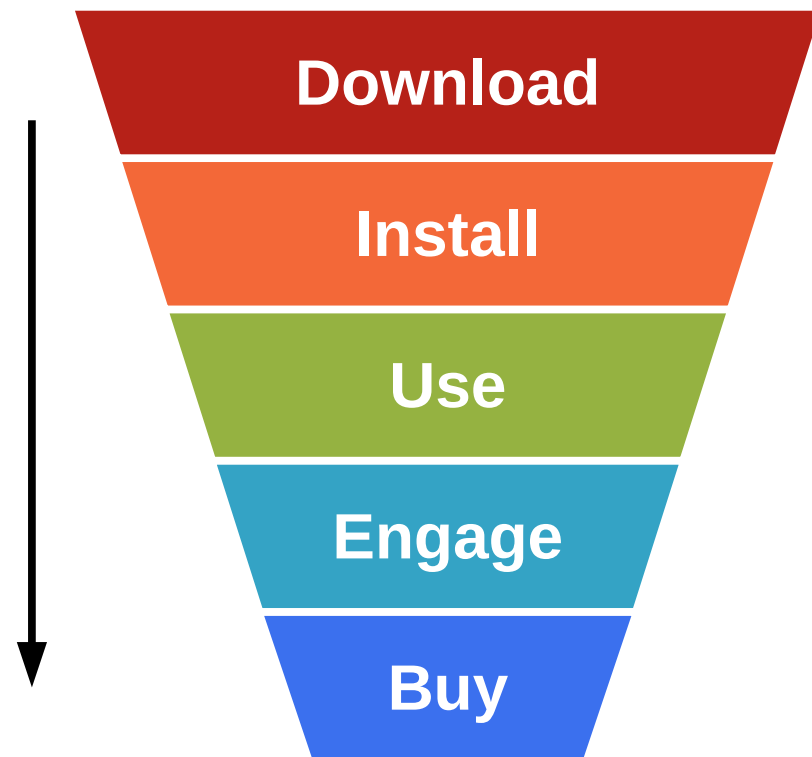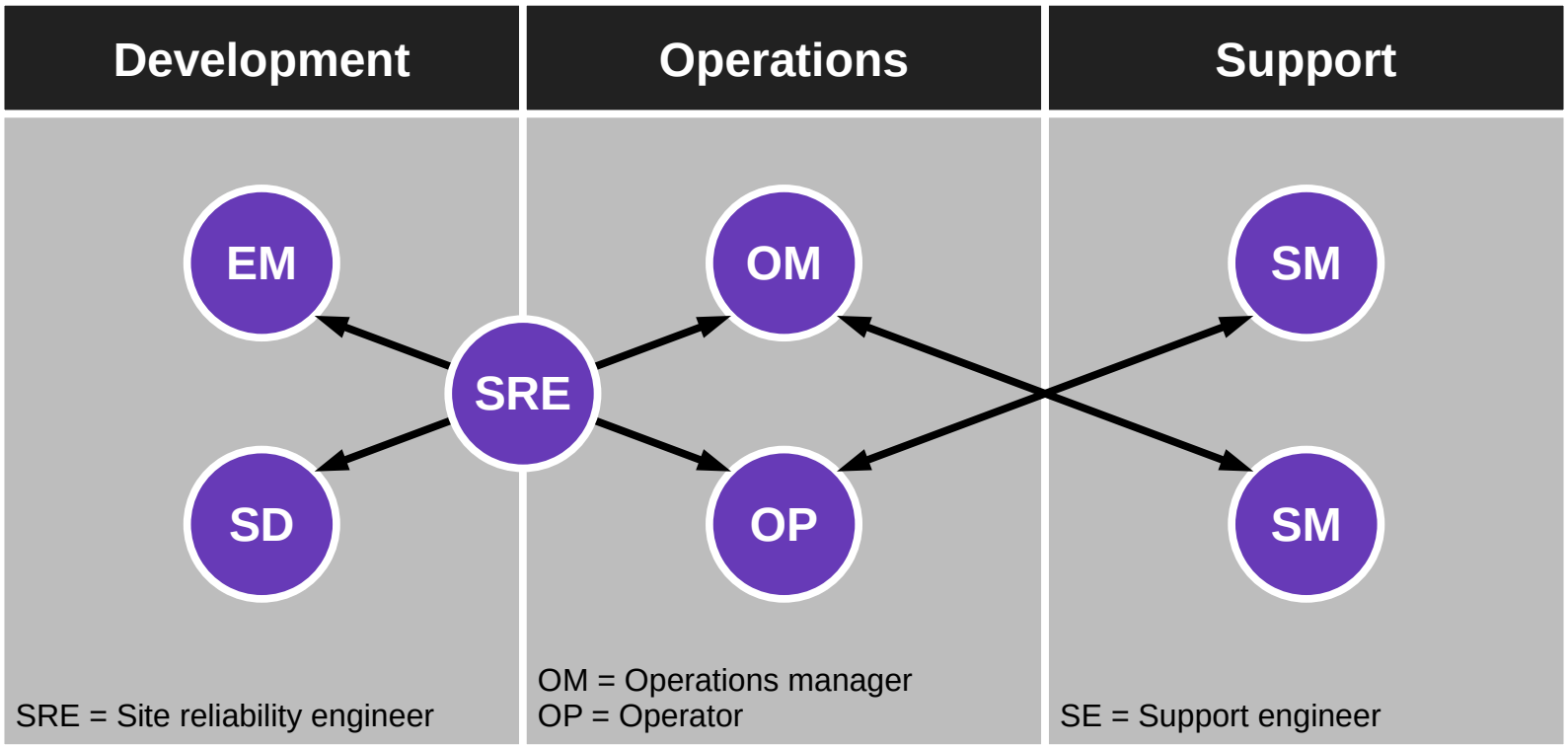
revenue

time

1   2   3   4   5

Sales and Marketing			Professional services	Product management	Engineering			Other (HR, Finance, ...)
Sales	Marketing	Customer success			Development	Operations	Support	
				■	■	■		■
■	■			■				
					■	■	■	
				■		■	■	
		■	■	■				

Sales	Marketing	Product Management	Development
VP of Sales	**Chief Marketing Officer (CMO) or VP of Marketing**	**Chief Product Officer (CPO)**	**VP of Engineering** **Chief Tech. Officer (CTO)**
Sales manager	**Marketing manager**	**Strategic product manager**	**Engineering manager** **Software architect**
Sales representative	**Marketing manager**	**Product manager**	**Developer**

Business Student

Engineering Student

Product Management	Development	Other

SPM = Strategic product manager
TPM = Technical product manager

EM = Engineering manager
SD = Software developer

FM = Finance
HR = Human resources

Sales	Marketing	Product Management
SR ⟵⟶	**MM** ⟵⟶	**PM**
SR = Sales representative	MM = Marketing manager	PM = Product manager

Awareness	**Download**
Discovery	**Install**
Evaluation	**Use**
Intent	**Engage**
Buy	**Buy**

Development	Operations	Support

EM

SRE

SD

OM

OP

SM

SM

SRE = Site reliability engineer

OM = Operations manager
OP = Operator

SE = Support engineer

Product Management	Support	Dev Ops
SPM ↔	SM ↔	EM
TPM ↔	SE ↔	OP

CEO

- CRO
  - VP of Sales
    - Sales
  - VP of Marketing
    - Marketing
  - Customer success
  - VP of Professional Services
    - Professional services
- CTO
  - VP of Product Management
    - Product management
  - VP of Engineering
    - Development
    - Operations
- CHRO
  - Human resources
- CFO
  - Human resources

B04

Business Models

end-user

end-user's
manager

IT
department

economic
buyer

(customer)
personas

Customer = user (same legal entity), and economic buyer = end-user

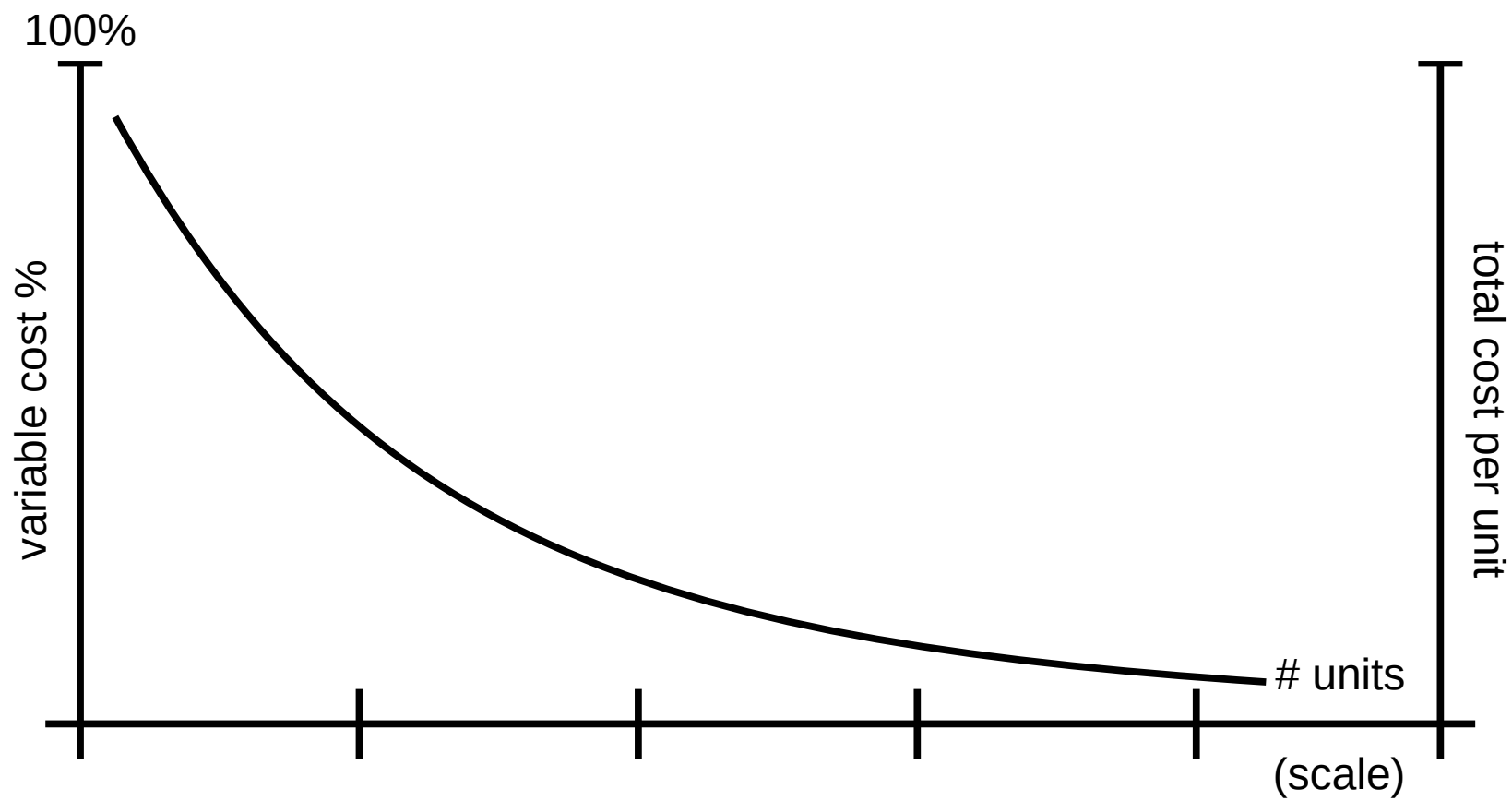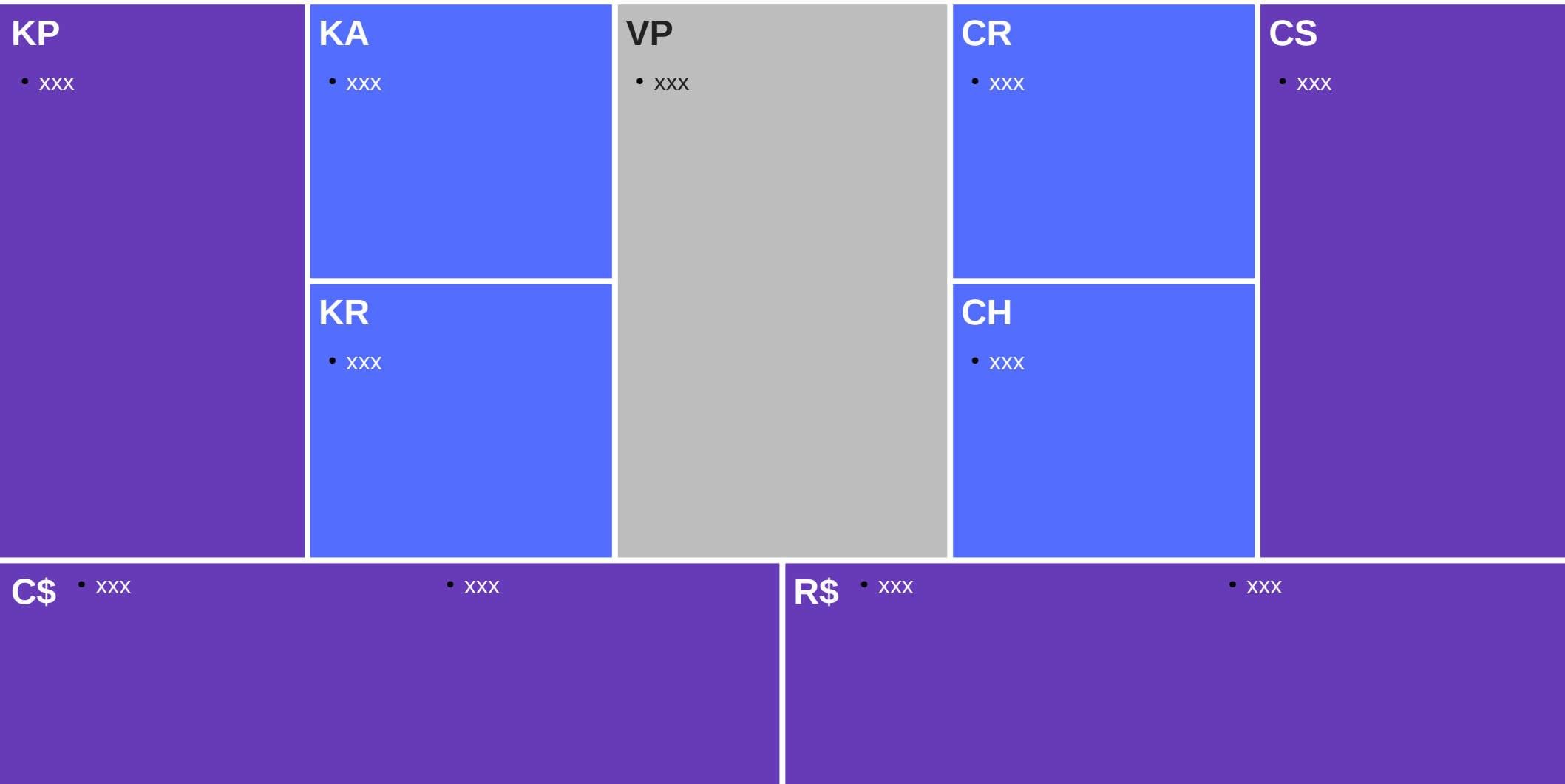Customer = user (same legal entity), but economic buyer is different from end-user

Customer

"User", i.e. "the product"
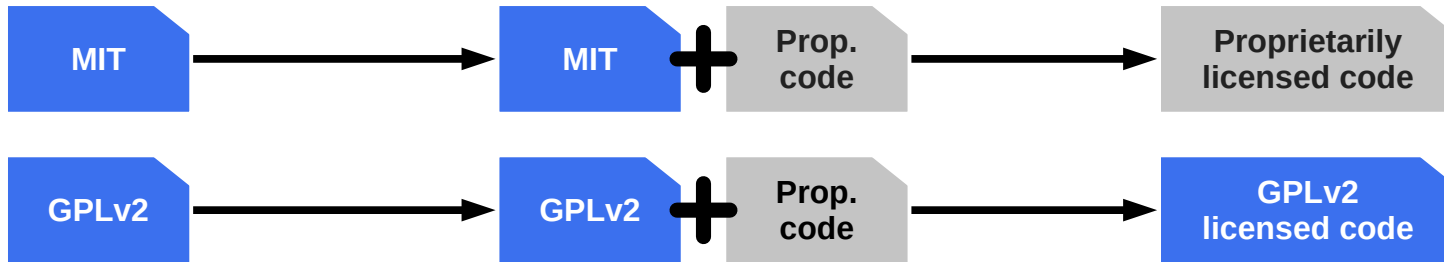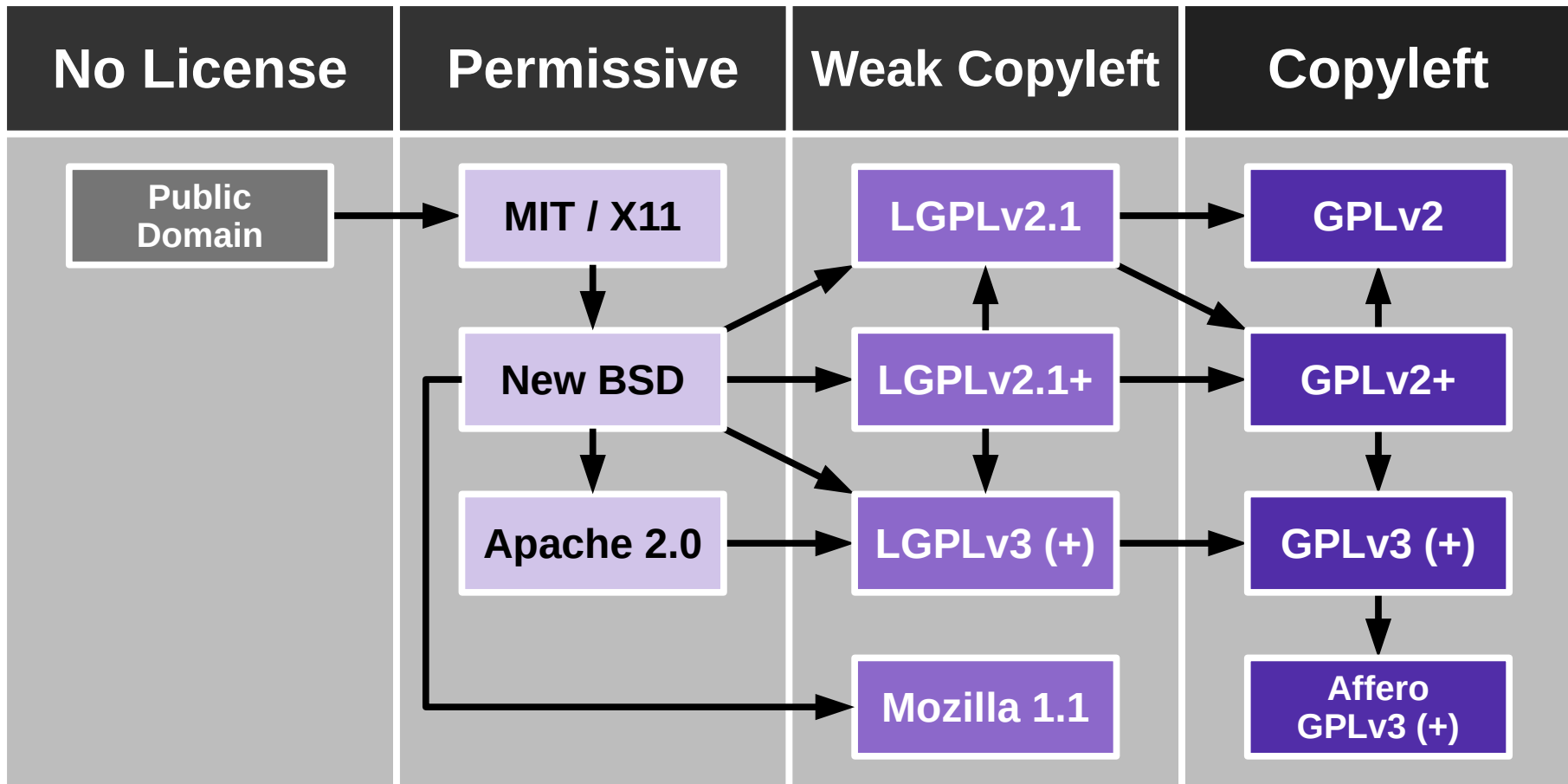
KP
- xxx

KA
- xxx

KR
- xxx

VP
- xxx

CR
- xxx

CH
- xxx

CS
- xxx

C$
- xxx
- xxx

R$
- xxx
- xxx

C01

Open Source Software

No License	Permissive	Weak Copyleft	Copyleft
Public Domain	MIT / X11	LGPLv2.1	GPLv2
	New BSD	LGPLv2.1+	GPLv2+
	Apache 2.0	LGPLv3 (+)	GPLv3 (+)
		Mozilla 1.1	Affero GPLv3 (+)

Software vendor

product

Licensed from supplier   Imported as library

Supplier tier 1

closed source
comp #24   ...   open source
proj #5332   ...   open source
proj #152

whatever they are up to   who knows

Supplier tier n

open source
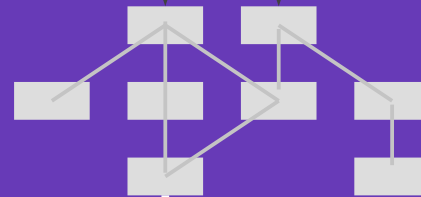comp #897   ...   open source
proj #832   ...   open source
proj #21632

product

closed source comp #24
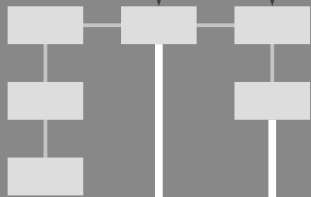
open source proj #5332

open source proj #152
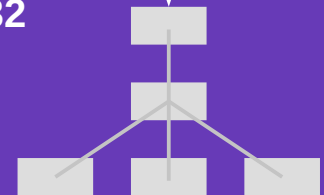
open source comp #897

open source proj #832
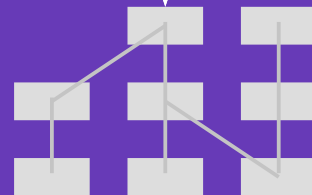
open source proj #21632

User-led consortia (foundations)

2009
GenIVI Alliance

2005
Kuali Foundation

Single-vendor open source firms

1995
MySQL

2004
SugarCRM, Jaspersoft, Hyperic, ...

**Developer-led foundations
(Natural persons and vendors)**

2004 Eclipse Foundation

1999
Apache Software Foundation

2007
Linux Foundation

Open source distributor firms

1994
Red Hat

1992
Suse

2002
Univention

2004
Canonical

Service and support firms

2011
Hortonworks

1989
Cygnus Solutions

2005
Automattic

2009
MariaDB

1987
GCC

1993
Debian

Traditional community projects

1984
GNU Emacs

1991
Linux kernel

1996
PostgreSQL

2004
CentOS

year

Money spent on bundled solution

Customer demand curve

Application

Platform

Customer demand curve

Additional customers

Application

Open source platform

Number of customers willing to buy

Total solution market

Ecosystem 1   Ecosystem 2

$$$$ Application
$$$$ Application

$$$ Platform
$$$ Platform

Total market size

Two competing platforms
with equal ecosystem size

Total solution market

E 1   Ecosystem 2

$$$ A
$$$$ Application

$ P
$$$$ Platform

Dominant platform
with larger ecosystem size

```
                        Open source
                         foundation
                              △
        ┌─────────────────────┴───────────────────────────┐
        │                                                  │
  Developer-led                                             │
   foundation                                               │
        △                                                   │
  ┌─────┴──────┐                                            │
  │            │                                            │
Community-led   Vendor-led                              User-led
 foundation     foundation                             foundation

e.g. Apache Software Foundation    e.g. Linux Foundation    e.g. Kuali Foundation
```

C02

Open Source Projects

Committer

explicit promotion

Contributor

implicit promotion

User

2. Passive user

4. Bug fixer

6. Active developer

8. Project leader

1. Reader

3. Bug reporter

5. Peripheral developer

7. Core member

User | **Contributor** | **Committer**

Roles

Posts

ST SD EM PM

User Contributor Committer

Committer

Contributor

explicit promotion

implicit promotion

User

Foundation member

explicit promotion

Project Management Committee leader

explicit promotion

Project Management Committee member

Commercial
products and services

Community open
source software

**Product /
vendor 1**

**Product /
vendor 2**

• • •

**Product /
vendor n**

Community open source platform

D01

Commercial Open Source

	Web Store	Direct Sales
Open Source Community	DOC · INC · UTIL	
Enterprise Customers		LIC · UPD · UTIL / DOC · TRN · 24x7
ISV / OEM		LIC · UTIL / DOC · TRN · 24x7

Legend

DOC	Documentation
INC	Incident-based support
UTIL	Utilities
LIC	Commercial license
UPD	Update service
TRN	Training
...	
24x7	24x7 hotline

```
Market product → Engage in comp. sales → Win contract!

Market product ↓
Provide open source ↓
Track users → Generate leads from behavior
Track users ↓
Connect users of organization → Identify champion → Make sales call → Win contract!
Generate leads from behavior ↓ Identify champion
```

D02

Product Strategies

Strategic product management

Technical product management

Solo entrepreneur

PM   EM   SD

Roles
Posts

Founder

Team-based startup

PM   EM   SD

Roles
Posts

CPO   CTO

Mature vendor

SPM   TPM   EM   SD

Roles
Posts

PM   EM   SD

PM =   Product manager (strategic + technical)
SPM =   Strategic product manager
TPM =   Technical product manager
CPO =   Chief Product Officer

EM =   Engineering manager
VPE =   VP of engineering
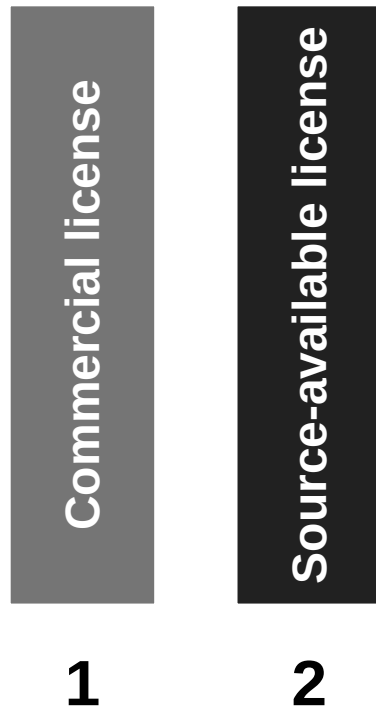CTO =   Chief Technology Officer
SD =   Software developer

As a → <persona> → I need → <function> → so that → <value>

As a → <persona> → I need → <function> → so that → <value>

```
If ──── <expr>        must              offer <actor> the opportunity to

When ── <event>   ●   should   <system>   be able to.        <object>

As long as ── <duration>   will                    .           <activity>
```

	open license	closed license	
Software	BI Report Editor	BI Report Generator	• Copyright • Patents
Hardware	Tensorflow (Software)	Tensorflow Hardware	• Patents • Trade secrets
Service	Database Software	Cloud Ops Software	• Copyright • Patents

Application

1 — commercial license
2 — AGPLv3

Component

1 — commercial license
2 — MIT / AGPLv3 / MIT

Dual-Licensing

Commercial license

1

Source-available license

2

Triple-Licensing

Commercial license

1

AGPLv3

2

Source-available license

3

D01

Software Startups

Problem-solution fit ⟷ **Product-market fit** ⟷ **Channel-product fit**

Channel

Digital

	Books	Software

Physical

	Food	Events

Physical   Digital

Product

Search

| Customer discovery | → | Customer validation |

Pivot

Execution

| Customer creation | → | Company building |

Customer validation

Customer discovery

Customer creation

Various	**Problem-solution fit**	**Product-market fit**	**Channel-product fit**	...
Blank [1] Ries [2]	**Customer discovery**	**Customer validation**	**Customer creation**	...
Moore & McKenna [3]	**Innovators**	**Early adopters**	**Early majority**	...

time

[1]   Blank, S. (2005). Four steps to the epiphany.
[2]   Ries, E. (2011). The lean startup.
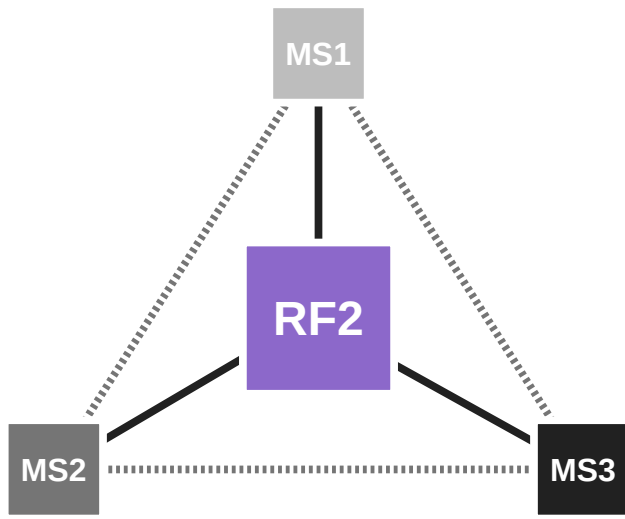[3]   Moore, G. A., & McKenna, R. (1999). Crossing the chasm.
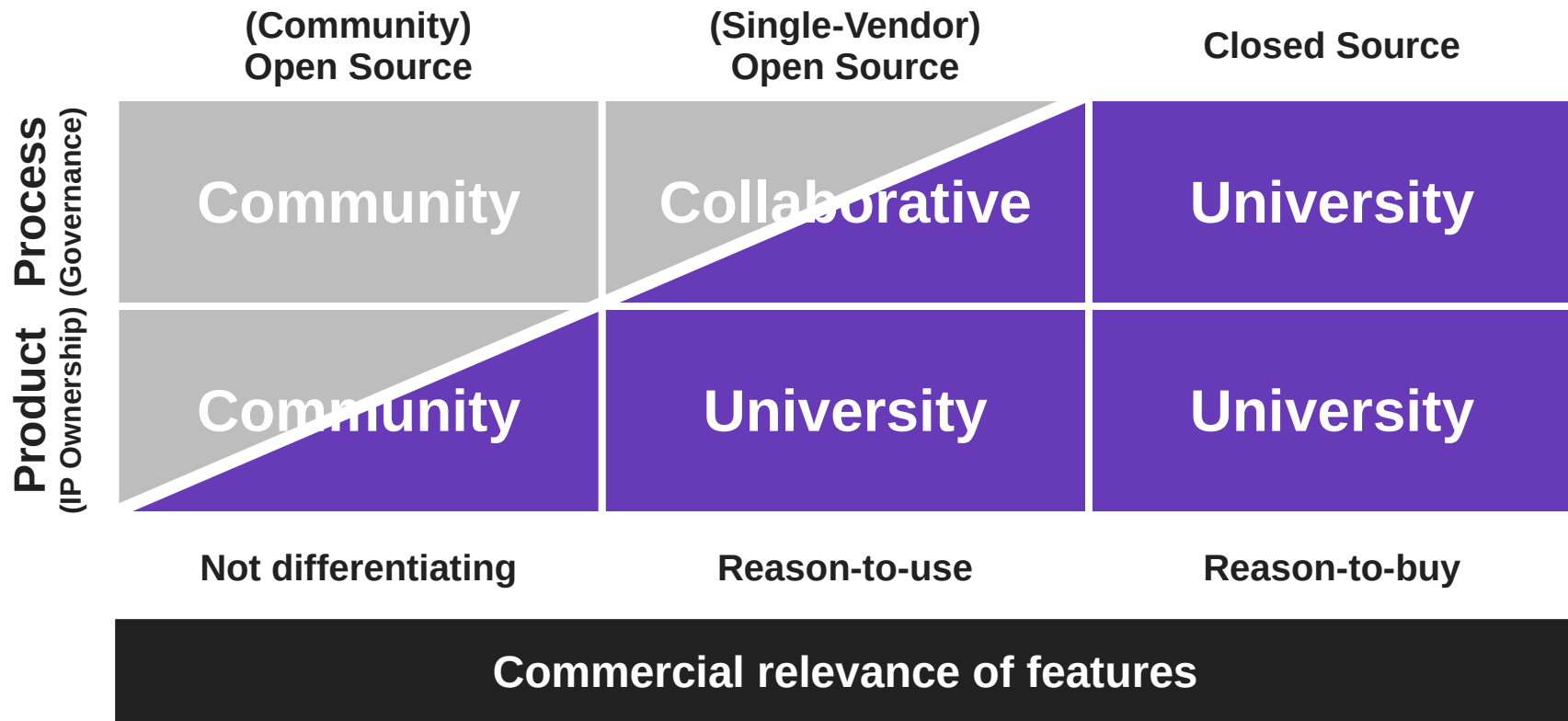
D02

Research vs. Startup

Roles

Posts

EM   PM

RF   P

MS1   MS2   ...   MSn

P   = Professor
RF = Research fellow (WiMi / PhD student)
MS = Bachelor or Master student

P = Professor
RA = Research associate
MS = Bachelor or Master student

	(Community) Open Source	(Single-Vendor) Open Source	Closed Source
Process (Governance)	Community	Collaborative	University
Product (IP Ownership)	Community	University	University
	Not differentiating	Reason-to-use	Reason-to-buy

Commercial relevance of features

(Community) Open Source

(Single-Vendor) Open Source

Closed Source

Product
Process
(IP Ownership/Governance)

Community

Collaborative

University

Community

University

University

3

2

1

Not differentiating

Reason-to-use

Reason-to-buy

Commercial relevance of features

**(Community)
Open Source**

**(Single-Vendor)
Open Source**

Closed Source

Product Process
(IP Ownership / Governance)

Community	Collaborative	University
Community	University	University

4 **5** **6**

Not differentiating **Reason-to-use** **Reason-to-buy**

Commercial relevance of features

D03

University Spin-offs

D04

Fundraising

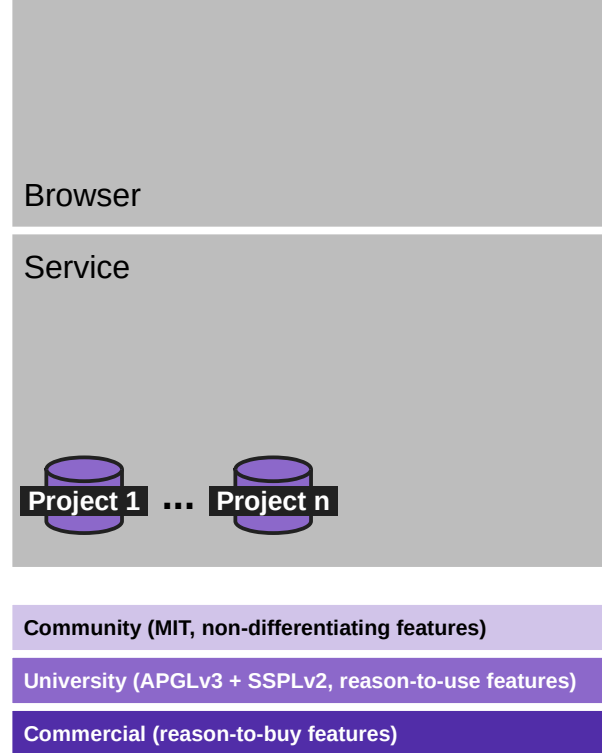**Funder** | **Program** | **Program manager** | **Grant proposal** | **Proposer**

Unused

Open Data Service
(runtime)

Exporter, Client Libraries

Query API

Database / warehousing
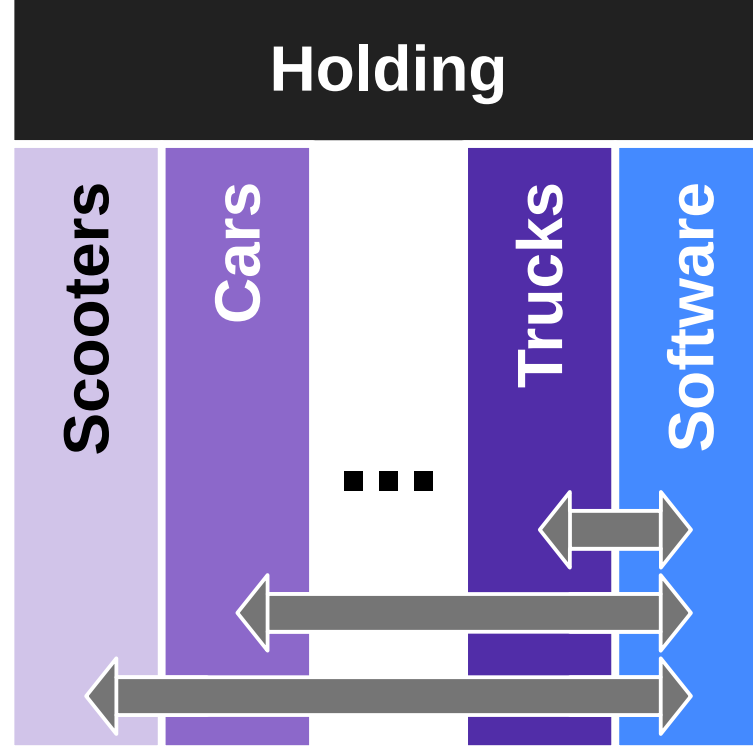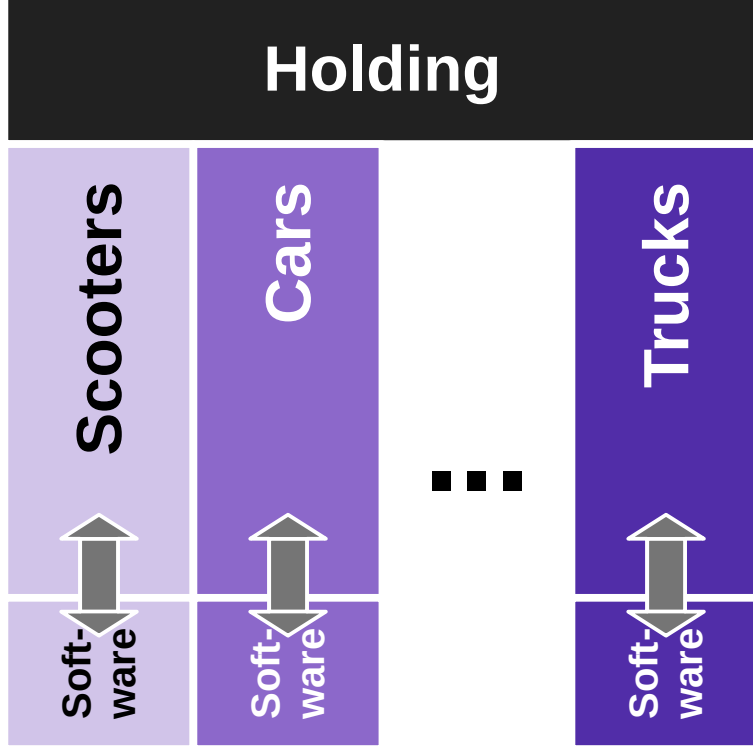
ETL Process

Kernel

Kernel extensions

Adapter

Cloud Service

Data Engineering Workbench
(modeling)

Kernel

Browser

Service

Domain model

ETL Process

Kernel

Kernel extensions

Adapter

Cloud Service

Project Hub
(libraries)

Browser

Service

Project 1 ... Project n

Community (MIT, non-differentiating features)

University (APGLv3 + SSPLv2, reason-to-use features)

Commercial (reason-to-buy features)

software

software

10010101
11010010
01101011
10111010

software
+ data

Every
year

Every
minute

Openness / reusability

Not differentiating — **Competitively differentiating**

Holding company

Inner source code

Company 1 / product line

Reusable platform code

Product 1 specific code

Product 2 specific code

...

Product n specific code

Company 2 ...

Company 3 ...

Open source code

Price of product

Without open source

$$$$ — Cost of other components

$$$$ — Cost of supplied closed source component

With open source

$$ — Potential added revenues

$$$$ — Cost of other components
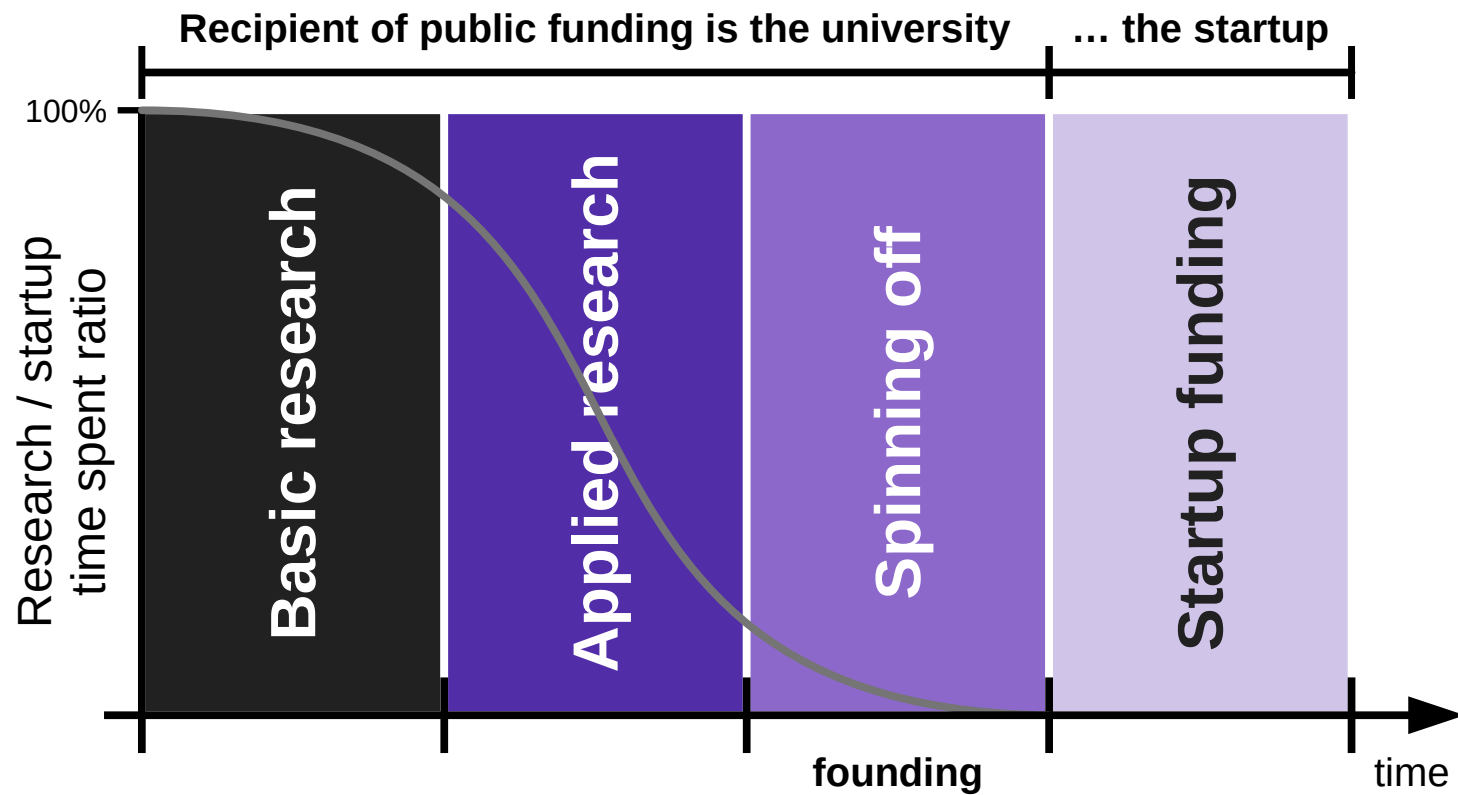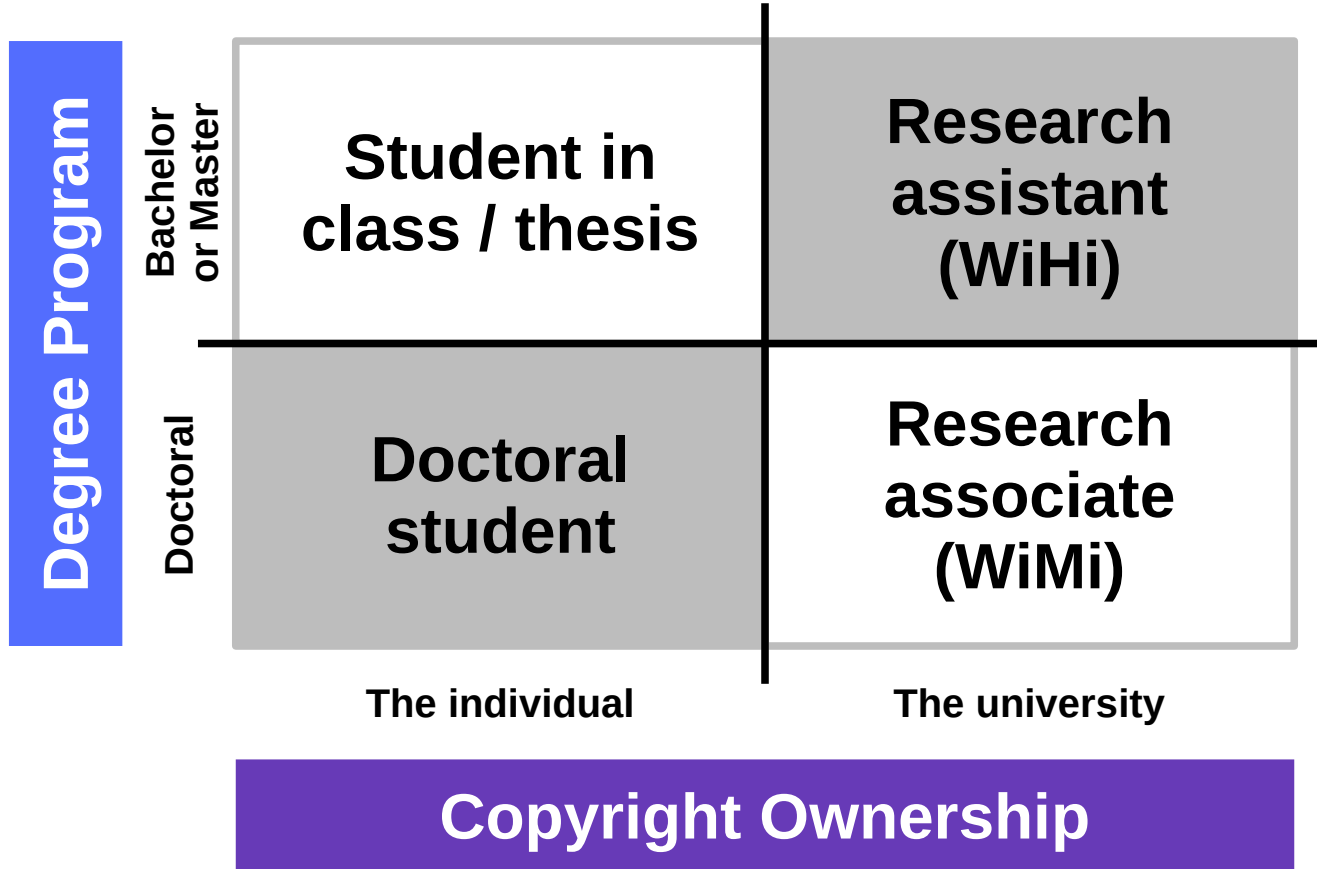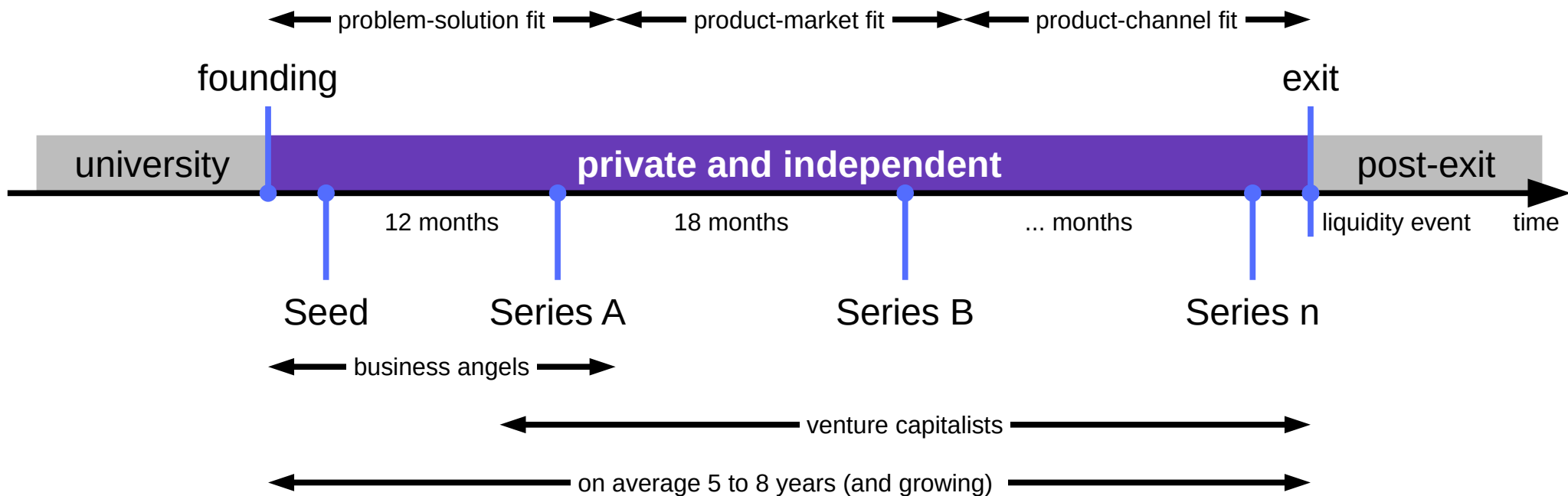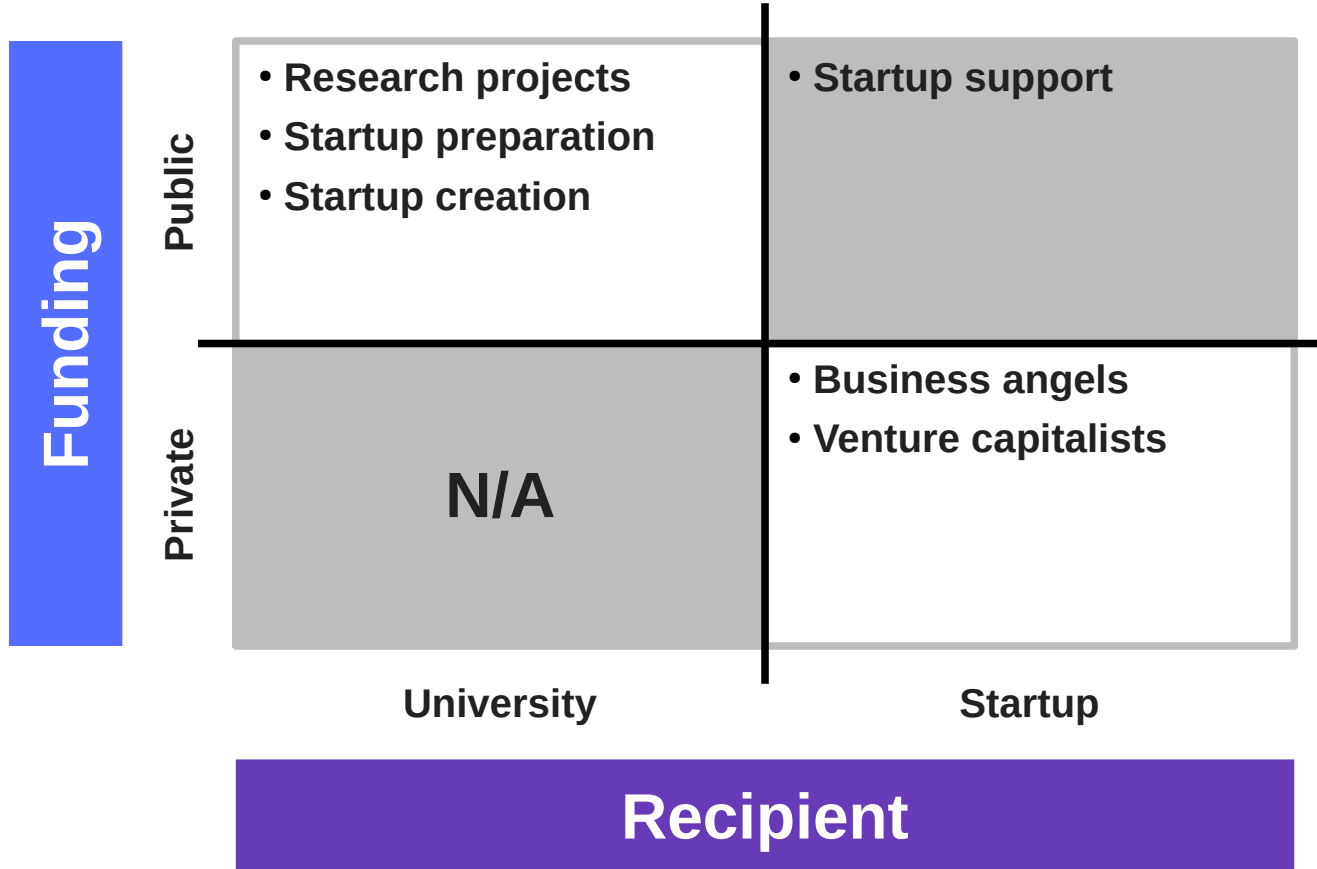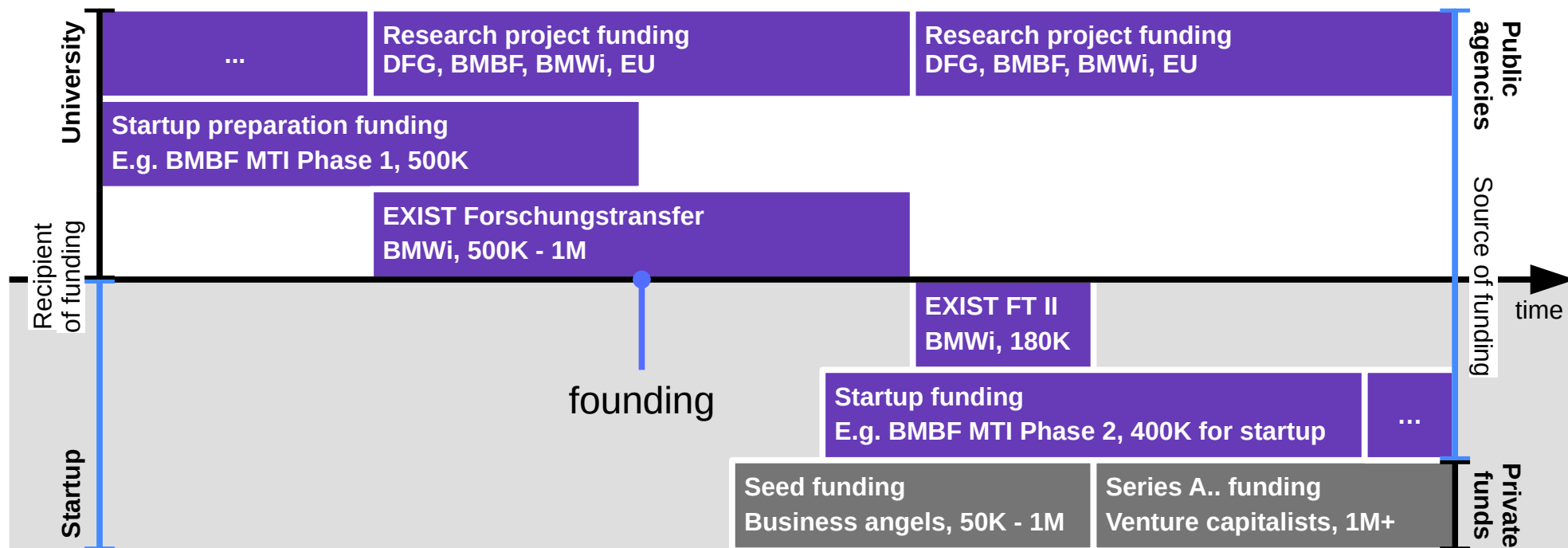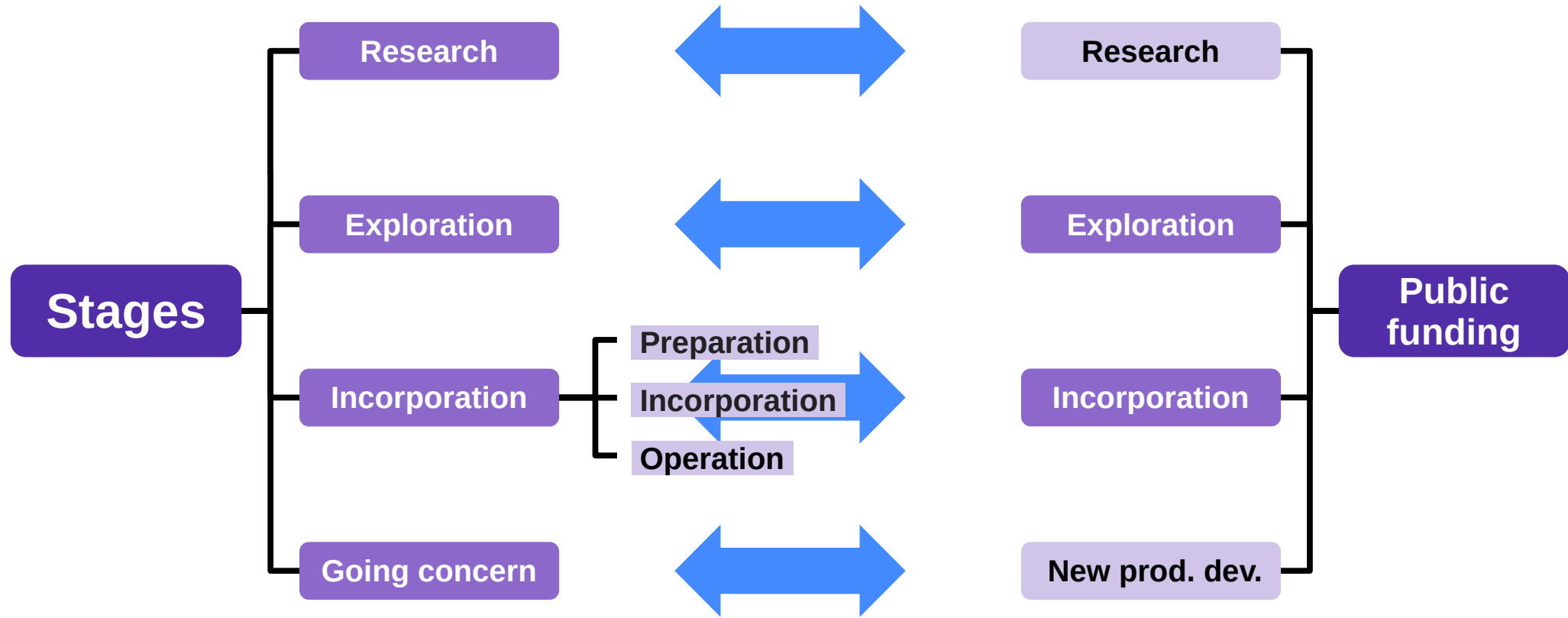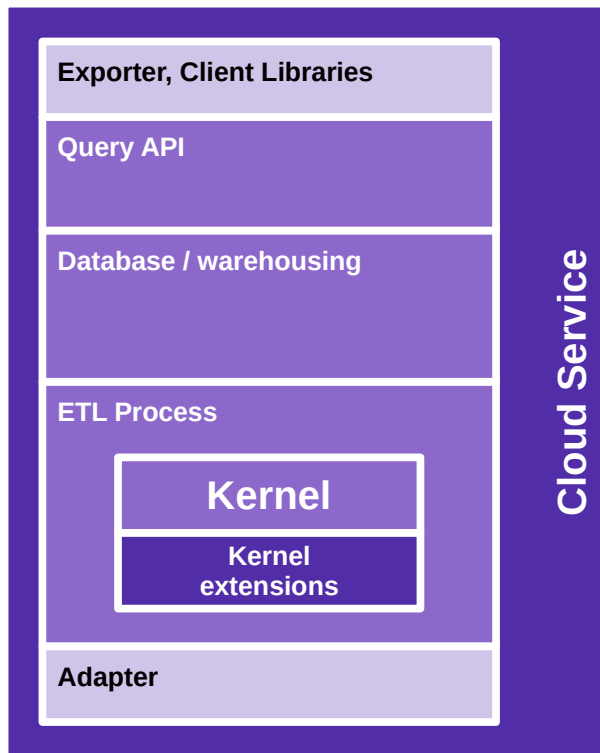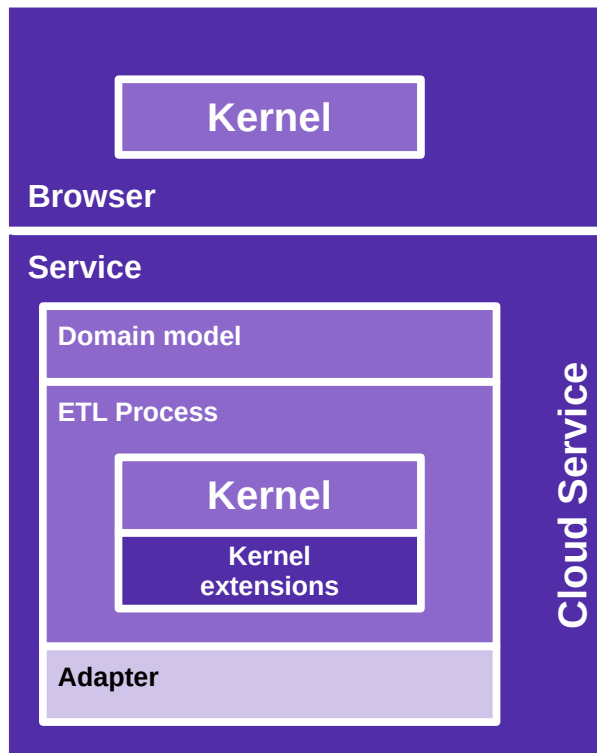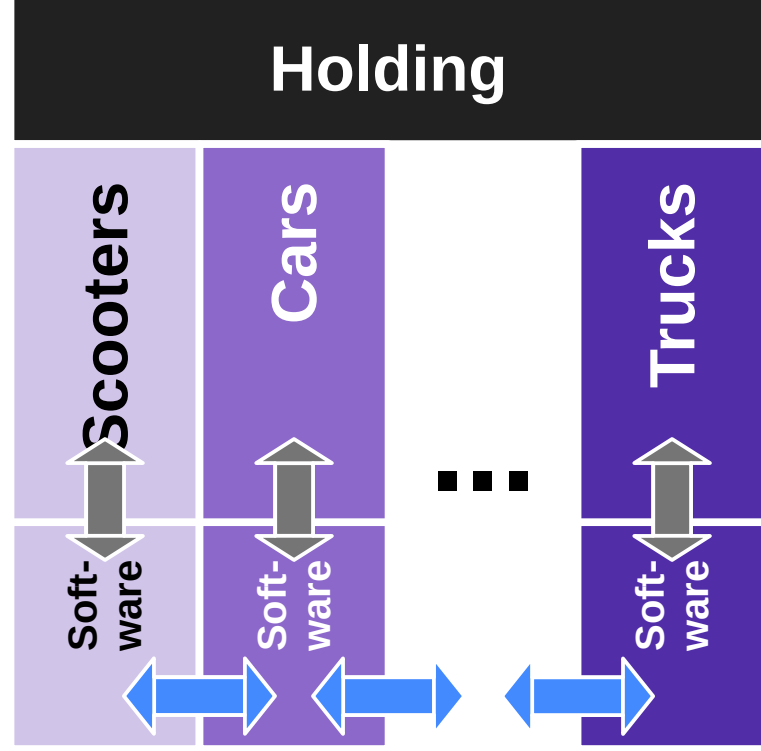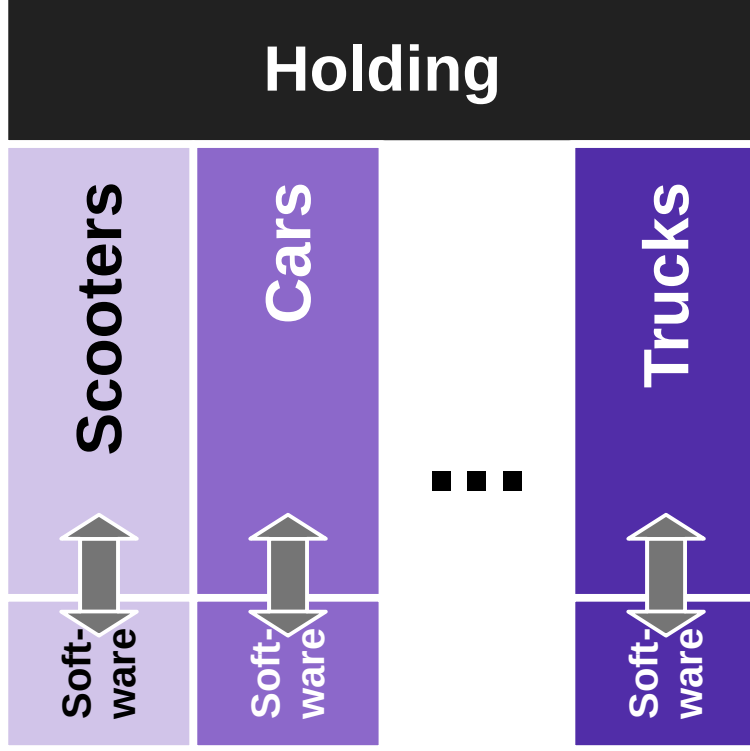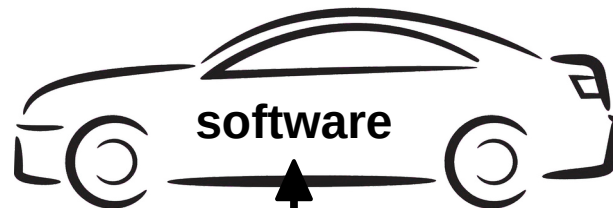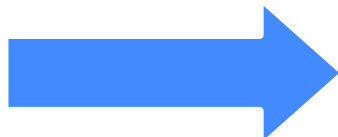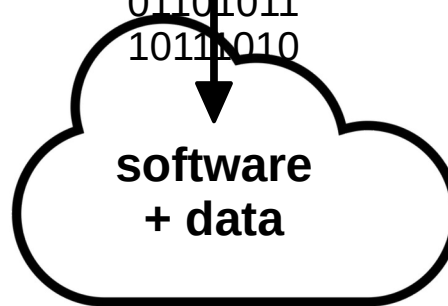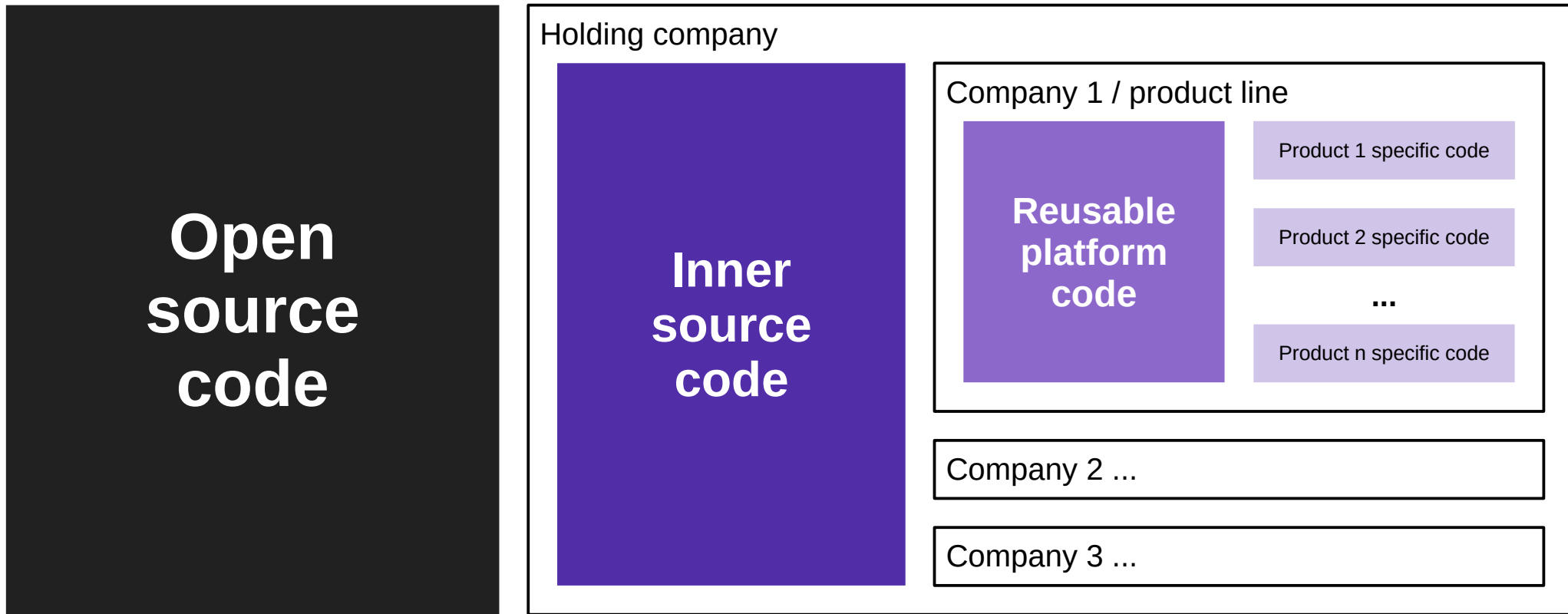
$$ — Cost of open source component

3,5

3 / 5