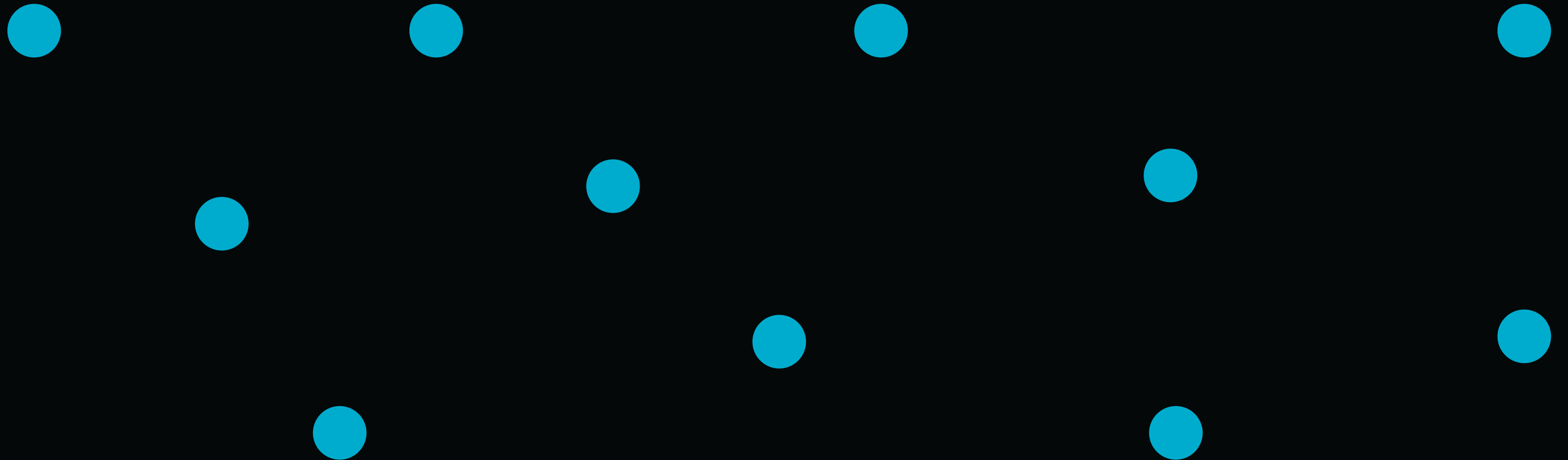
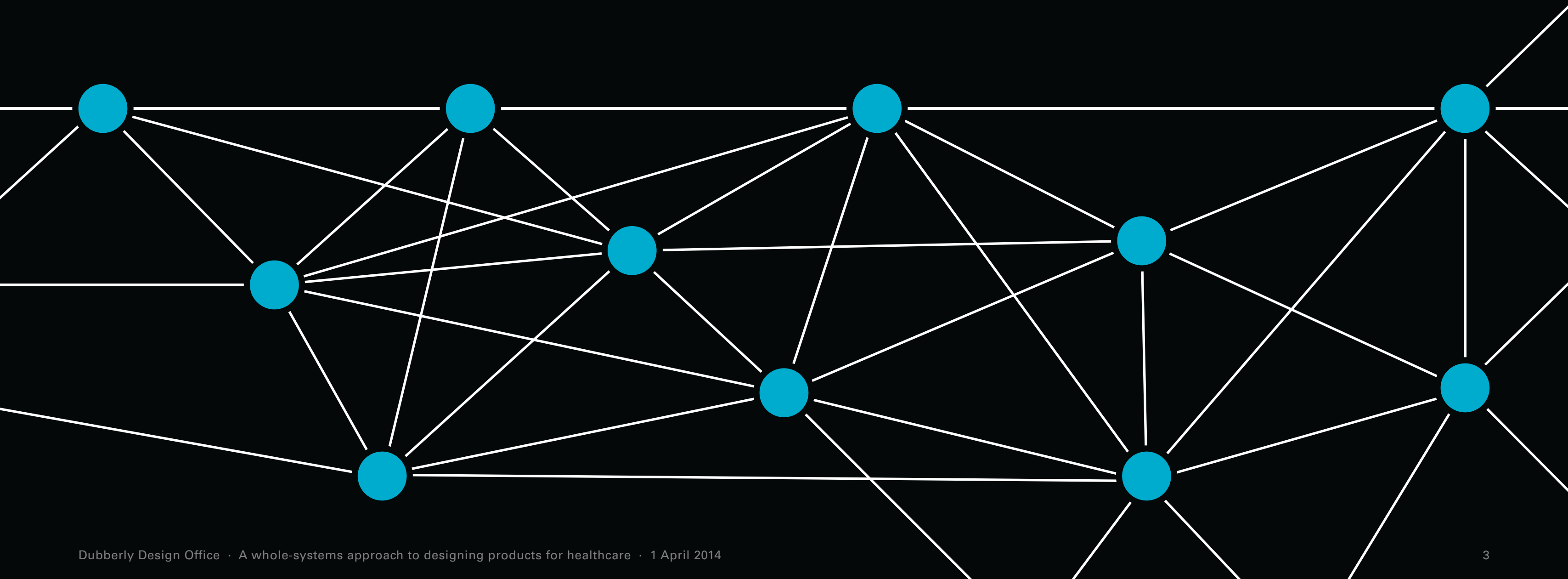


# A whole-systems approach to designing products for healthcare

**Traditionally, we have thought about “things” —  
as if things can be **isolated**—  
especially problems, products, and even users.**



# Yet, the world is **connected**



*“... commercial products are best treated as though they were **services**.”*

*It's not what you sell a customer, it's what you **do** for them.*

*It's not what something is, it's what it's **connected** to, what it does.*

*Flow becomes more important than resources, Behavior counts.”*

—Kevin Kelly, Wired



**The connected nature of the world suggests that we take a **whole-systems approach** to product development—especially to healthcare, care-giving, and wellness.**

**A patient is not merely an individual;  
most people belong to a series of social networks.**

**Care-givers form a **support network**—  
and can come from multiple social networks.**

- Patient
- Spouse
- Adult Children
- Friends + neighbors
- Co-workers
- Others who share the same chronic condition

**Managing a chronic condition is not simply about being a good patient.**  
**Patients have complex lives, which require managing**

- Cooking and eating
- Maintaining personal hygiene
- Cleaning clothes + home
- Sleeping
- Working
- Paying bills
- Maintaining family + social ties



# Many patients rely on a **network of health-care providers**

- Primary care physician (GP or interest)
- Specialists (e.g., an endocrinologists and cardiologist)
- A phlebotomist and other lab technicians
- A visiting nurse or home aid
- A health coach

# Health-care **providers** work amidst still more **networks**

- Their practice
- A hospital or hospitals
- Private and government payer systems
- Education requirements + certification systems
- Mandated standard practices + government regulations
- The legal system

**Likewise, a product never exists in isolation.  
Products arrive from and exist within  
a social-technical-economic matrix.**

- A specific culture in a specific time and place and related demographic and social changes
- Academic research communities + development industries and related technology trends
- Systems for funding R&D, creating + protecting property, and rewarding investment

# **A drug is not merely a “molecular entity”; a drug is chemistry + knowledge in action**

- Drug compound
- Processes for assuring quality components and manufacturing
- Indications + contra-indications
- Potential interactions + risks
- Knowledge about stability of the compound and requirements in the delivery process
- Claims
- Package insert
- Product data sheet
- Instructions for use
- Physical packaging

# Criteria for a successful product have many dimensions.

At a minimum, most products must meet a user need in a way that makes a profit, which sustains the growth of a business.

Health-care products must also be demonstrably

- Safe
- Effective... and increasingly they must also be
- Usable in the context of a patient's living

# Making a product usable in the context of a patients living often requires development of **multiple connected systems**

- The drug-knowledge-package system
- Drug manufacturing and delivery systems
- Systems for educating physicians and patients
- Systems for helping patients integrate the drug into their lives

# Making a product usable is rarely enough.

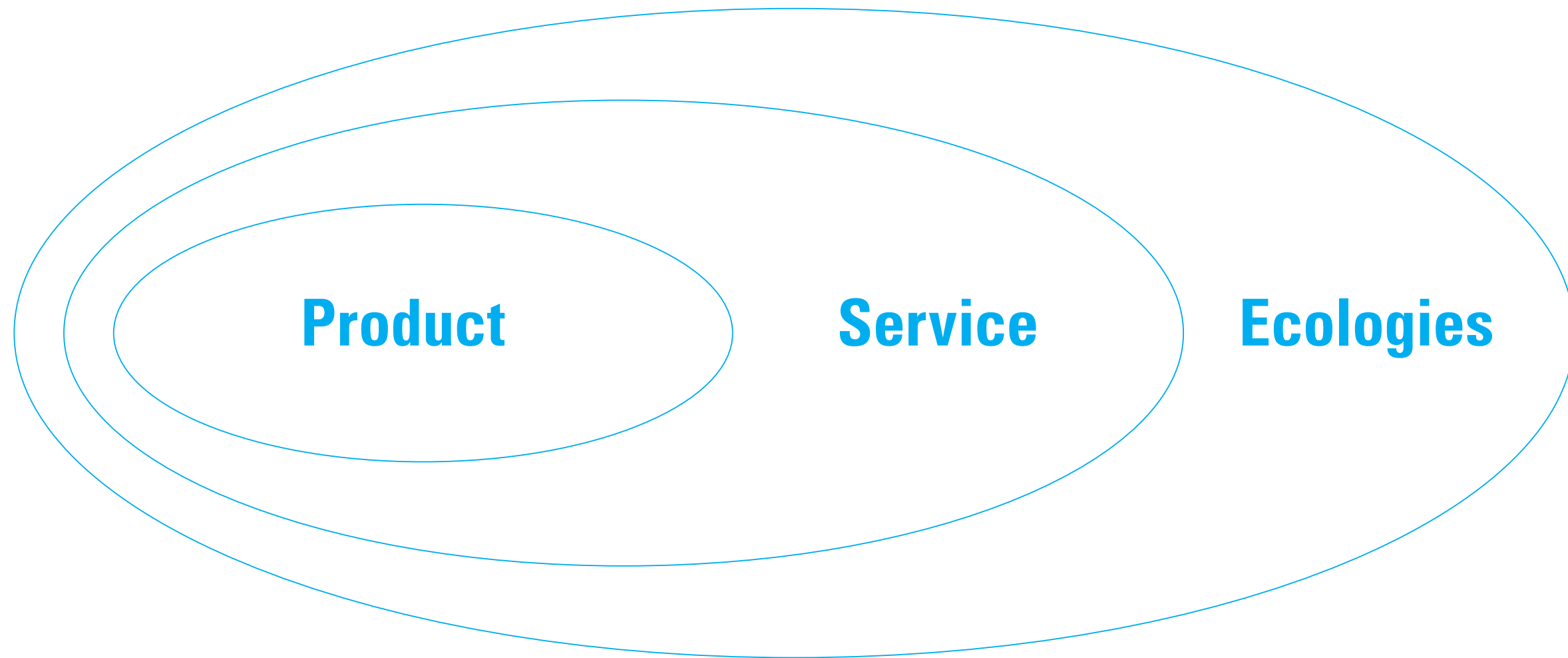
Products need to overcome buyer fears

- Is this product safe? understandable? usable?
- Can this provider be trusted? is the quality good?
- Will this providers remain in business?
- Will other people accept my use of this product?

We should aspire to products that do much more

- Enrich and delight
- Provide confidence, pride, and pleasure

This is part of a **larger trend**  
in which components are embedded in products  
and products are embedded in services  
and services are connected in communities or ecologies





*“... networks of products,  
services, technology, people,  
and collective and collaborative interaction  
are generating value  
for the populations they serve.”*

— Jodi Forlizzi, CMU



# Stages of Experience

—Pine & Gilmore

## Commodity

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**1¢–2¢** Per Cup

Beans

## Goods

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**5¢–25¢** Per Cup

Roasted and ground

## Service

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**75¢–\$1.50** Per Cup

Brewed and served

## Experience

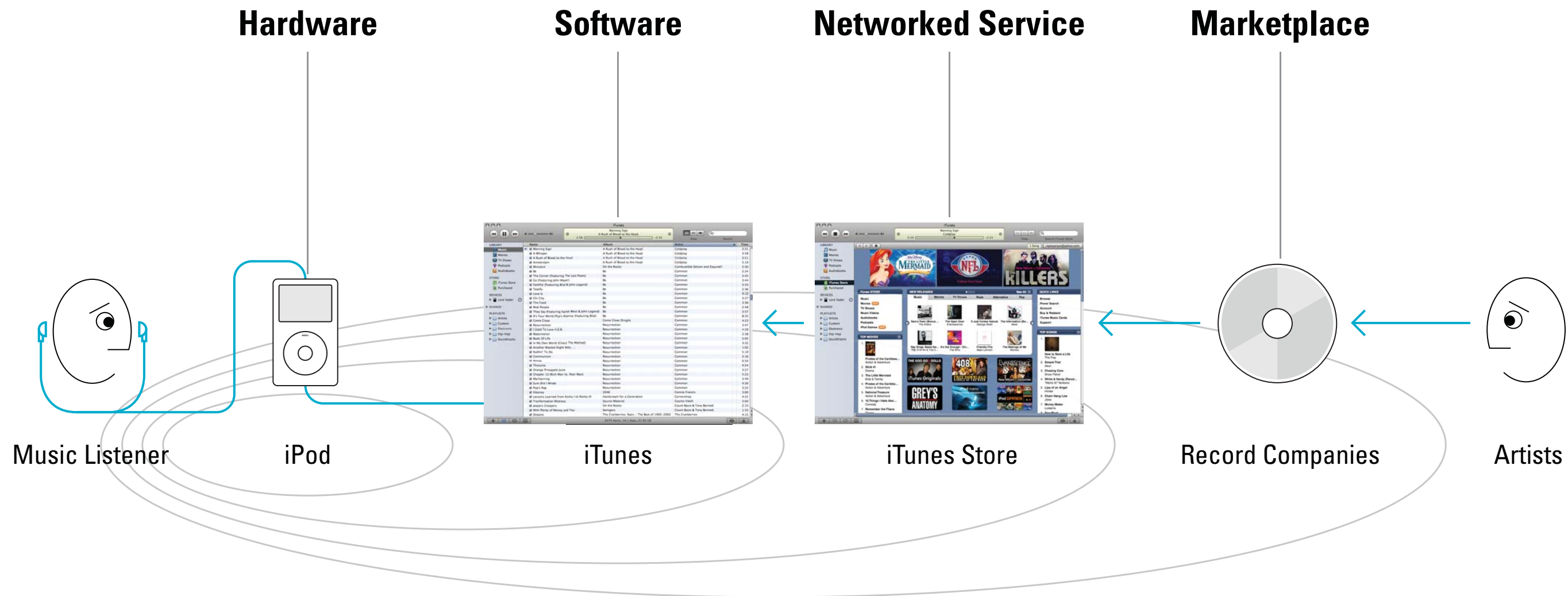
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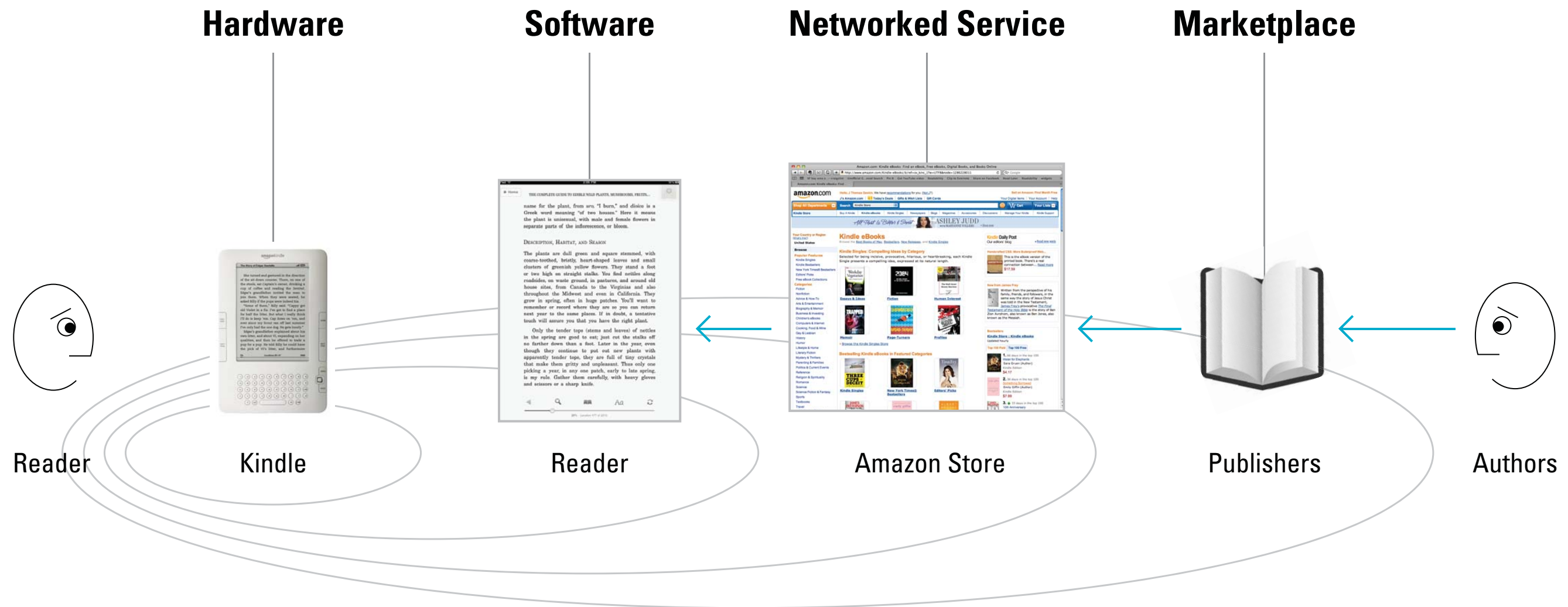
**\$2–\$5.00** Per Cup

Treating yourself  
to something special

# iPod is not a stand-alone product; it's an integrated system— a **product-service ecology**.

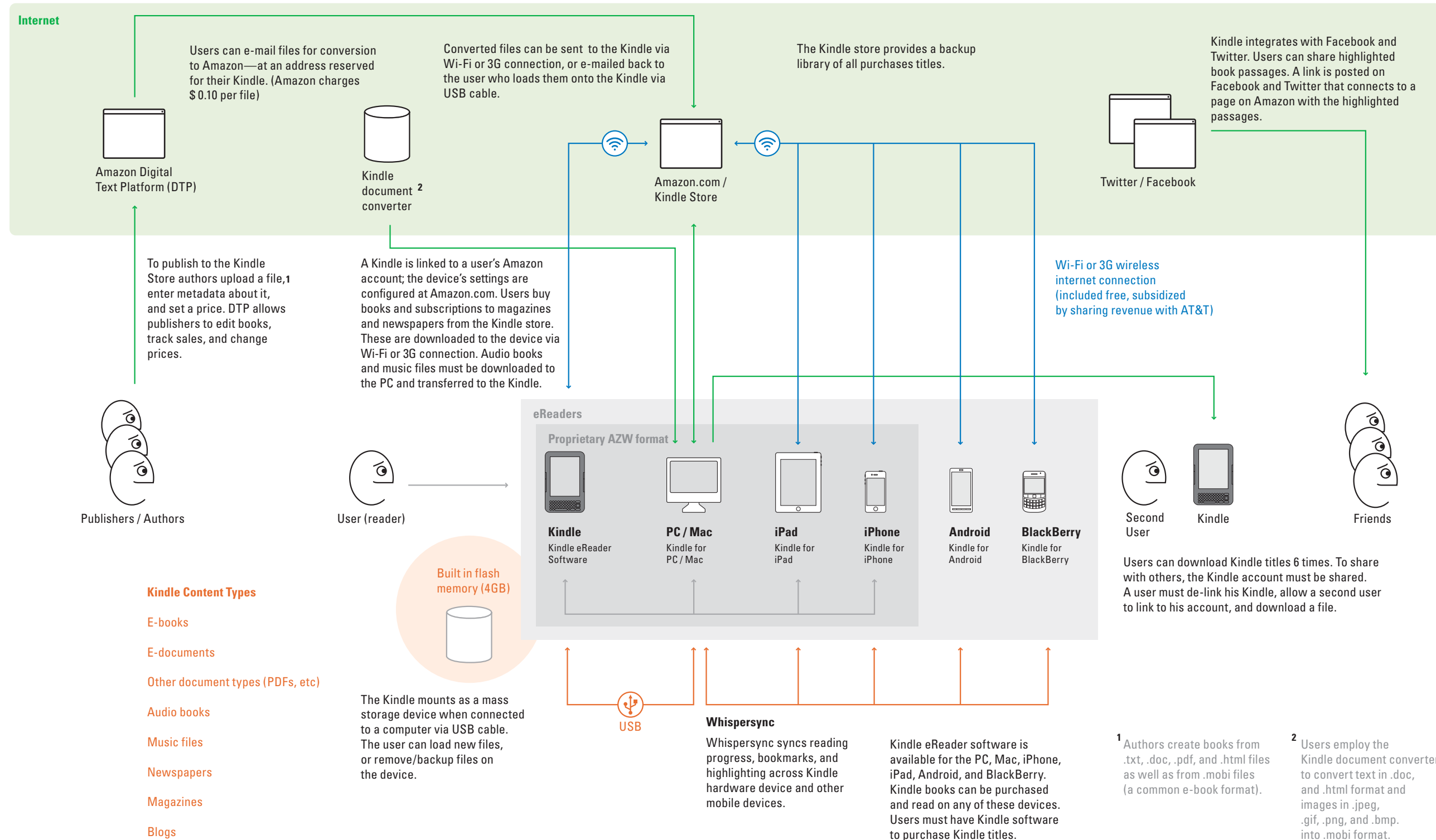


# Amazon's Kindle-Reader-Wispernet-Store system is another product-services ecology.





# In fact, the Kindle product-service ecology is even more complex.



**Building product-service ecologies**  
requires **teams with a wide variety of knowledge,**  
**for example**

- Chemists and biologists
- Clinicians
- Lawyers and regulatory experts
- Engineers and manufacturing experts
- Software developers and bio-informatics experts
- Product, communication, interaction, and service designers
- Marketing and distribution experts
- Product champions and project managers

**Increasingly, success will require  
a whole-systems approach to designing  
and developing all products.**

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