Lecture 01 - Digital Ecosystems

IN4150 – Lecture 1: Introduction to Digital Ecosystems

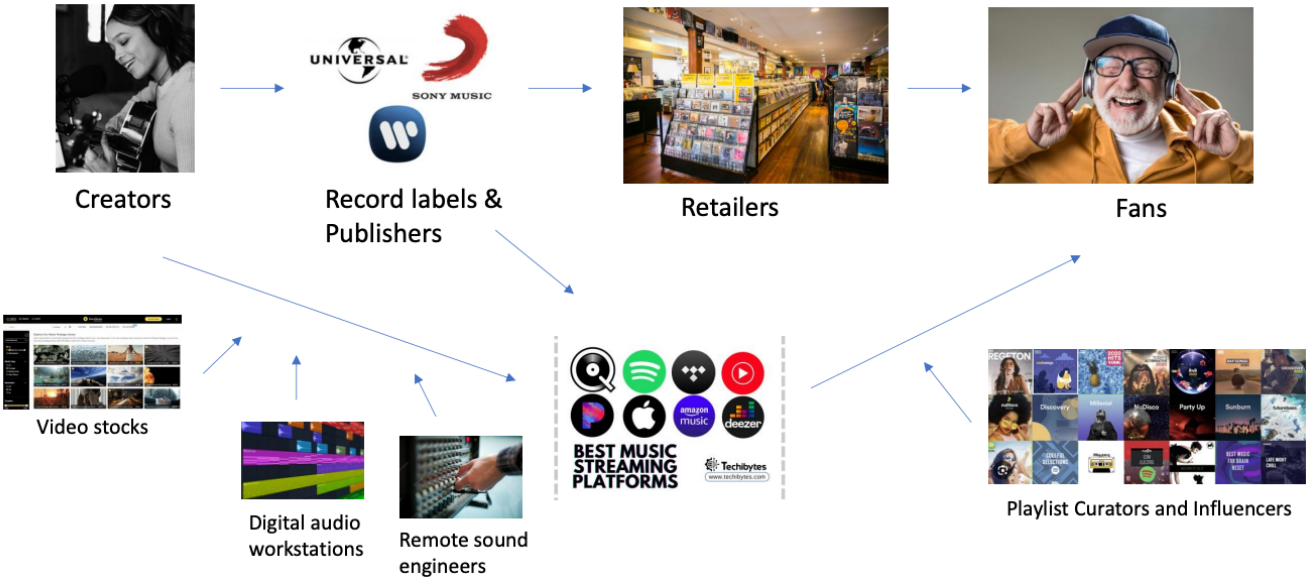
What is a Digital Ecosystem?

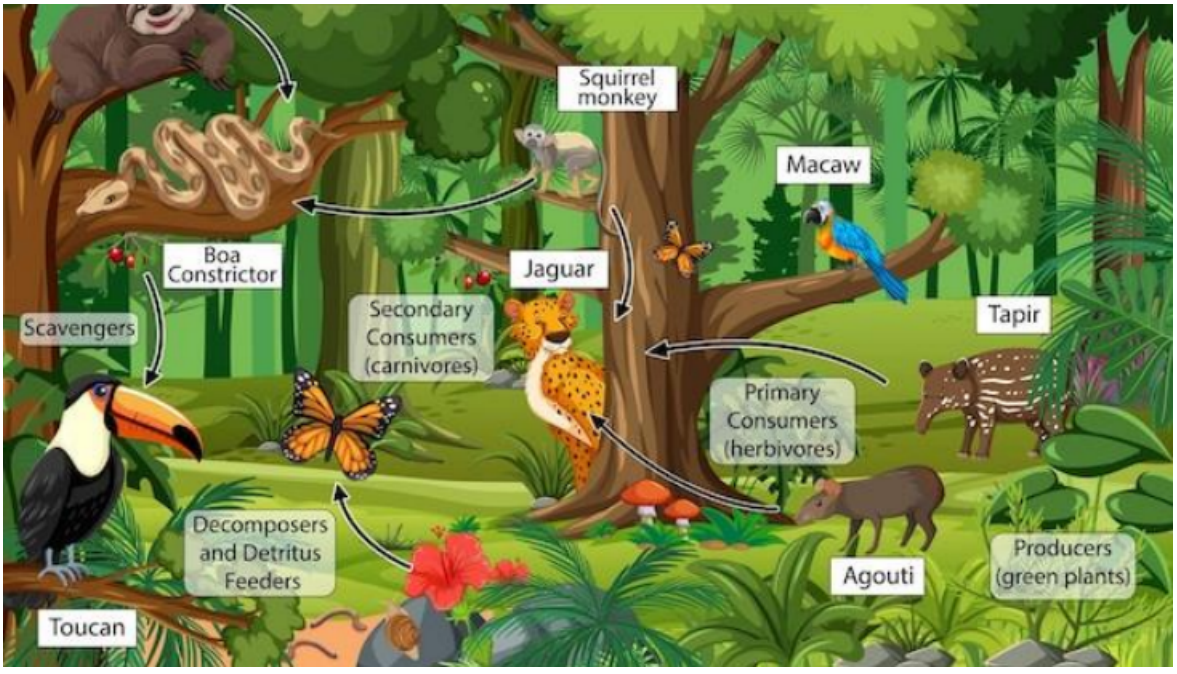
> **Ecosystem** = A constellation of different actors that create and exchange value together.

In digital ecosystems, these actors (platform providers, users, developers, companies, etc.) are **interconnected through digital technology**, often across **multiple industries**, not just one.

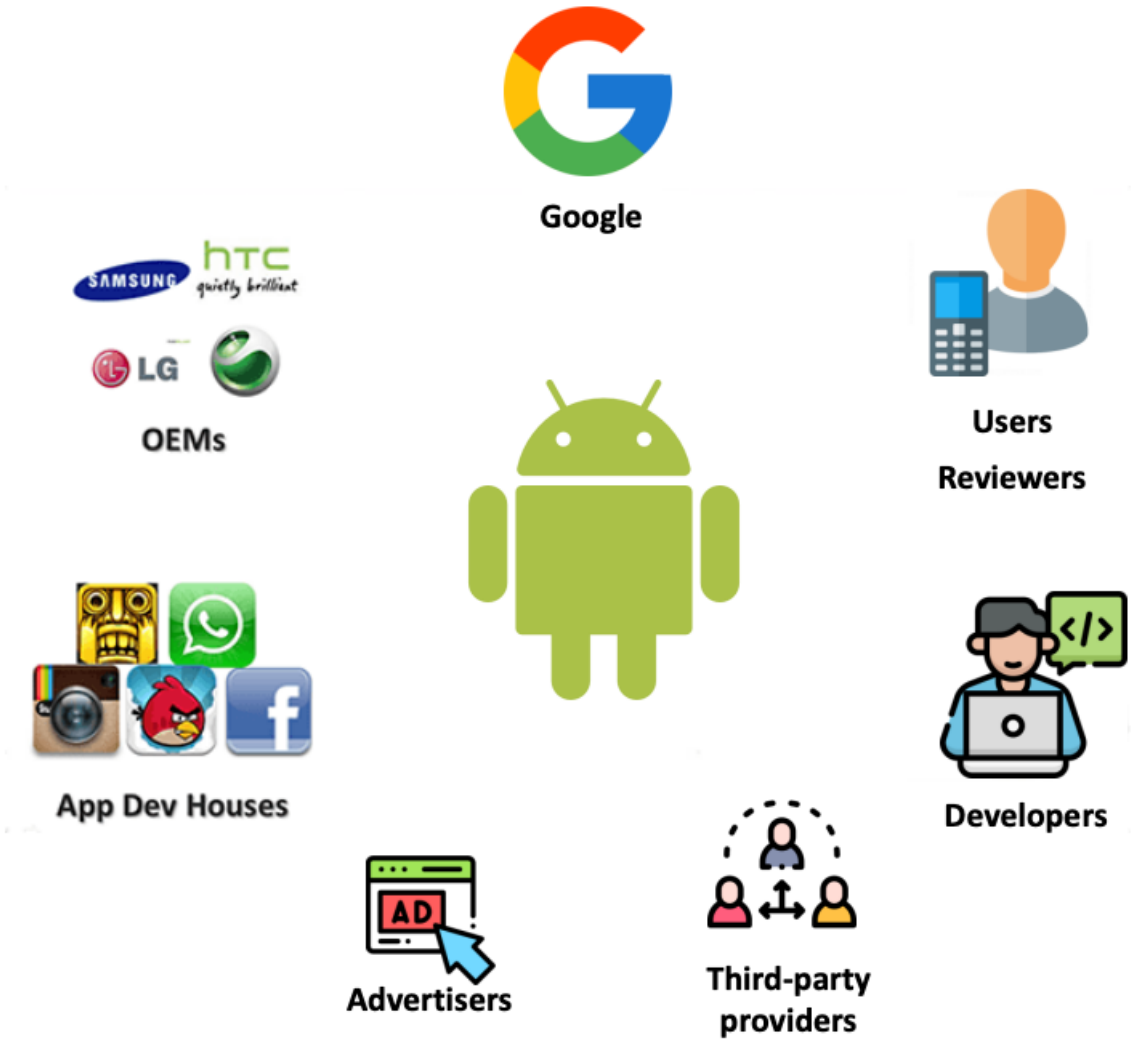
Examples

- **Music Streaming Ecosystem**: Artists, record labels, streaming platforms, data analysts, app developers, playlist curators, fans.
- **Android Ecosystem**: Google, developers, device manufacturers (OEMs), users, reviewers, advertisers, analytics services, etc.





Android Ecosystem



1. Diversity of Participants

- **Google**: Platform owner
- **Developers & Dev Orgs**: Build apps
- **OEMs (Device Makers)**: Customize Android, install apps
- **Users**: Download, use, review apps
- **Reviewers**
- **Third-Party Providers**: Ads, analytics, payments, cloud, UI libraries

2. Interdependent Roles

- **Google**:
  - Manages the Play Store
  - Sets platform rules
  - Offers tools & support to devs
- **Developers**:
  - Make apps that meet user needs
  - Follow Play Store policies
  - Push updates & support users
- **OEMs**:
  - Adapt Android to hardware
  - Pre-install apps
  - Offer updates & support
- **Users**:
  - Use and rate apps
  - Drive app visibility & revenue
- **3 rd Parties**:
  - Provide services that help devs improve app performance and user experience

3. Value Creation & Exchange

- **Monetary**:
  - Revenue from app sales, ads, hardware
- **Non-Monetary**:
  - Services (e.g., entertainment, social)
  - Personalization
  - Data sharing and learning

4. Adaptability & Evolution

- Software Vulnerabilities and Security Threats
- Changes in regulations
- Technological advancements
- Market competition
- Changes in (mobile) technologies

🛡️ GDPR and Ecosystems

GDPR affects how ecosystems operate, especially app developers:

- Requires **user consent** and **transparency**
- Pushes for **data minimization**
- Gives users the right to **delete or move their data**
- Affects **Play Store policies** and developer practices

🔧 Modularity

> **Definition (Baldwin & Clark, 1997)**:
> Building a system using independent parts (modules) that work together.

Example: Computers

- **Old Mainframes**: Incompatible, rigid
- **IBM System/360**:
  - Modular design
  - One architecture across many models
  - Allowed third-party module development
  - More flexibility, lower cost, better innovation

Modularity Components

1. **Visible Design Rules**:
   - **Architecture**: Blueprint of system and roles of modules
   - **Interfaces**: How modules connect (e.g., APIs)
   - **Standards**: Tests to check compatibility and quality
2. **Hidden Parameters**:
   - Internal details of each module
   - Can be changed freely without affecting the whole system
   - Enables **innovation within parts**

🧩 Modularity in Digital Ecosystems

1. Platform Architecture

- Modularity in the platform's design makes it easier to update, scale, and adapt without breaking everything else.

2. Ecosystem Design

- Developers can add value by creating **extensions, add-ons, or apps** using APIs provided by the platform.
- Enables niche products and broader participation.

🌟 Benefits

- **Innovation**: Developers can experiment and improve
- **Scalability**: Platform works across many devices and users
- **Resilience**: One failing part doesn't crash the whole system

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🔬 Ecosystem Research Streams

Ecosystem Type	Focus
Business	The firm and its environment
Innovation	A specific innovation or value proposition
Platform	The core platform and how participants form around it

(Shipilov & Gawer, 2020)

🔗 Platforms vs Ecosystems

Platform Type	Description
One-sided	Single user group (e.g., early Facebook)
Multi-sided	Multiple interacting groups (e.g., users + advertisers)
Hybrid	Combines platform roles (users, devs, business)
Ecosystem	A broader, dynamic network with distributed control

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📌 Final Summary

- **Digital Ecosystems** = Networks of actors collaborating and exchanging value through digital means
- Key traits:
  - **Diversity**, **Interdependence**, **Value Exchange**, **Evolution**
- **Modularity** enables innovation, flexibility, and resilience
- Platforms are **parts** of ecosystems, but ecosystems **go beyond** platforms