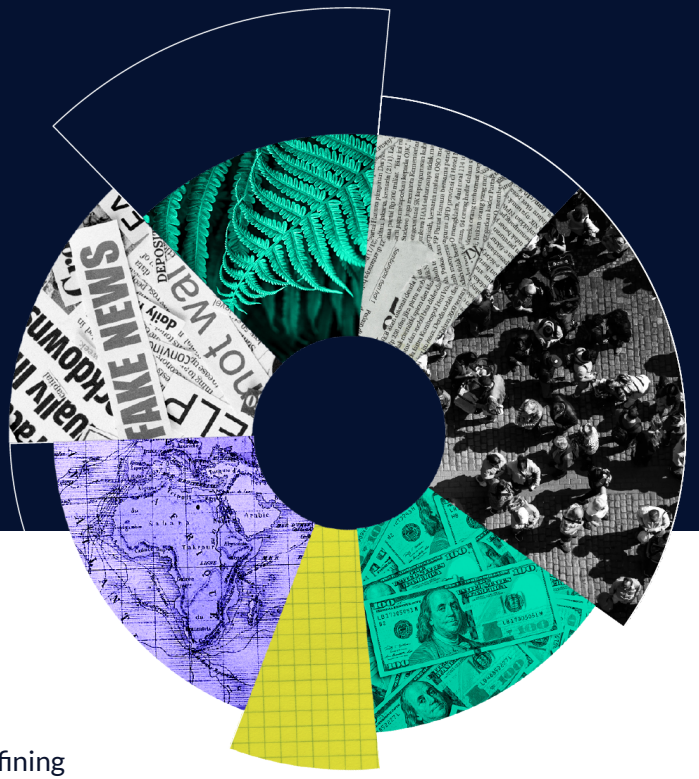
TRANSPARENCY & ACCOUNTABILITY INITIATIVE

Healthy Information Ecosystem infographic

Courtney C. Radsch



Why an ecosystem?

A healthy ecosystem is a dynamically balanced ecosystem. Diversity, resiliency and integrity are defining characteristics of healthy ecosystems. A systems-based approach can improve awareness of resource allocation, where the gaps are, and how different funders and programming interact so that they can design more meaningful and effective objective-oriented interventions and support.

An ecosystem is a dynamic and flexible network of related and interconnected systems and heterogenous species (actors, institutions, technologies) that coexist and interact coopetitively (cooperation + competition) to sustain the broader ecosystem while increasing individual chances of survival and growth. Ecosystems are complex and multivariate, and a healthy one is balanced and resilient, meaning it has the capacity to absorb change, adapt and transform while maintaining a similar set of processes and structures. Ecosystems are not static but there are persistent structures that acquire their own history and structuring power and a stable participation of interconnecting groups of people and their tools and practices.[1]

What's a healthy information ecosystem?

A healthy information ecosystem refers to a balanced and well-functioning system of information creation, exchange, flow, and utilization. It is characterized by the presence of diverse and pluralistic sources of information, information integrity; responsible information production, management and securitization practices; and the ability of individuals and communities to effectively access, analyze, and use information for decision-making, culture-creating, community-building, and accountability. "By looking at the interrelationships and interactions between the diverse species that make up an ecosystem, we can get an insight on how they co-evolve" and affect the sustainability of the system.[2]

An ecosystem contains both human and material aspects, which are organized and affect each other in complex non-hierarchical and non-linear ways. There is no single gatekeeper or dominant power controlling the flow of information, but rather diversity and pluralism of information sources, flows, and platforms. Rather than putting the individual, citizen, or community at the center of analysis, this approach focuses on the way that information, technologies, institutions, norms, and practices refract across the larger networks in which humans are embedded.

- Information ecosystems have a sense of locality and are embedded in a variety of localities, and can thus be analyzed at multiple levels of analysis, from the local to the global.
- While there are a potentially infinite set of interconnected issues that impact this ecosystem, the taxonomy graphic homes in on the most directly influential and relevant aspects with greater specificity the closer to the center (similar to a taxonomy).

Why does it matter?

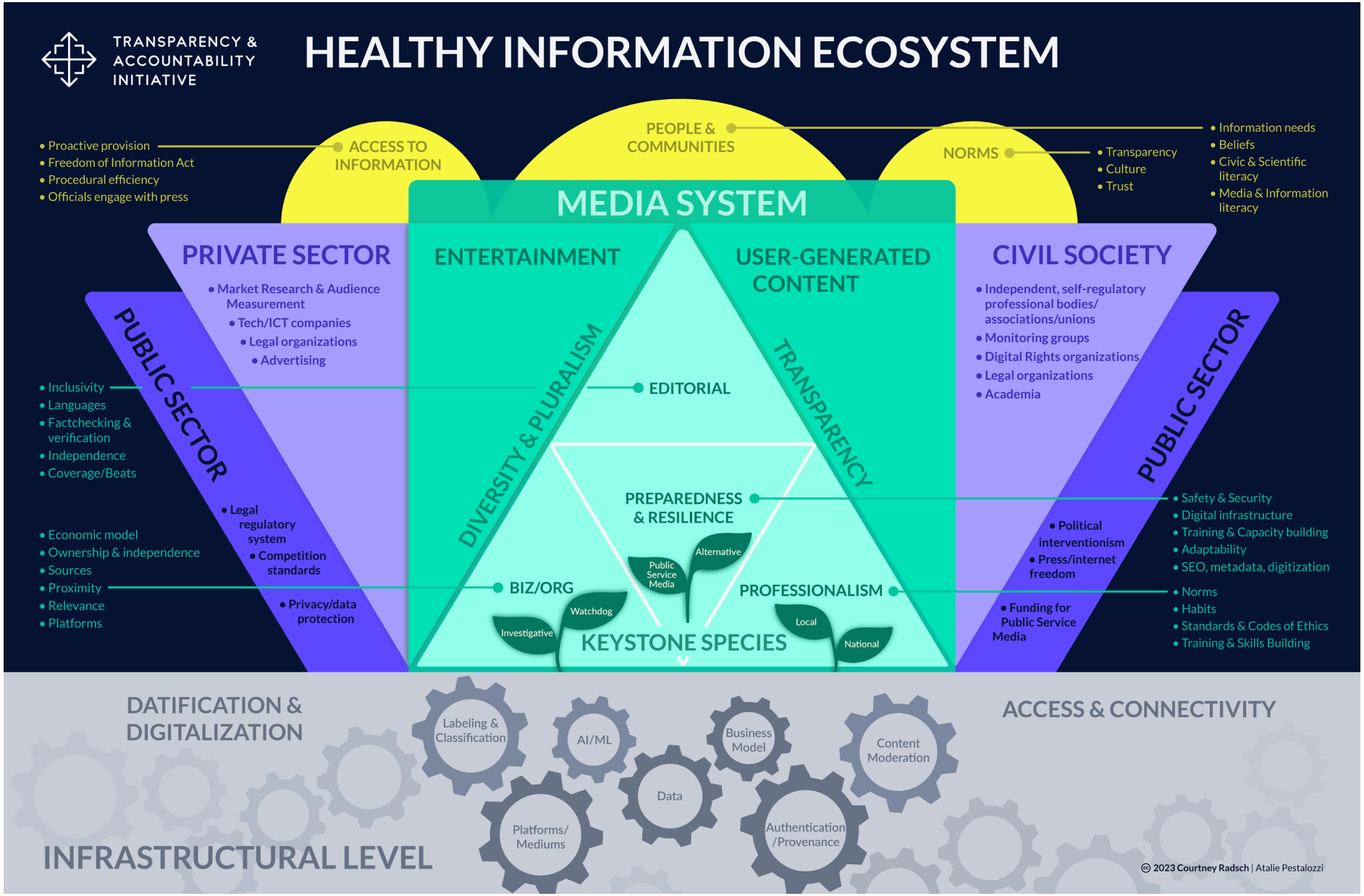
This effort to understand information ecosystems has drawn on several fields of research and is informed by the work and approaches of scholars, organizations and practitioners working on:

1. Information ecology and ecosystem studies.[3]
2. Media development, journalism, disinformation, and platformization.
3. Mapping specific news ecosystems and their entities, or the journalistic process.
4. Community-centered, needs-based (individual/group).
5. Network analyses of mis-, dis, and mal-information flows and influence operations.[4]

It was designed based on a literature review, recent interviews with journalists in 20+ countries, ethnographic research, and analysis of how technology policy and platform governance shape the public sphere and civic space.

This visual is an abstraction. It is an analytical tool that shows multidimensional aspects of an information ecosystem that can be used at various levels of analysis. Ecosystem analysis looks at how the system as a whole functions, with a focus on the interconnectedness and dependencies of its components and how these shape flows of information. This is a rhizomatic rather than an environmental analysis.[5]

- environmental approaches to information ecosystems center the individual or community, conceptualizing them as an organism at the center of a networked environment; this leads to a focus on media effects and behavioral analysis; it tends to focus on the amount of "healthy" information; a lack of quality news can make the organism sick and feed back into the larger polity, making it ill as well.[6] Much of the response to disinformation, online harms, and media development tends to focus on threat-based programming and funding approaches.
- a rhizomatic approach focuses on the larger networks enmeshing humans and non-humans alike and does not make the information consumer the center of its analysis. It identifies dynamics of information networks that are comprised of people and their behaviors and beliefs as well as information, institutions, technologies, norms and other human and non-human elements that refract across it. This is an ideal lens for an audience looking at these issues through a systems lens and addressing how their portfolio is balanced with that of the broader sector.



Boundaries of the ecosystem with its anchor institutions and keystone species

Boundaries of media system & its anchor institutions

Genus: News/ non-fiction media

Keystone species (presence is crucial to survival; helps define an ecosystem)

Infrastructural components of information communication technologies affecting info ecosystem

Key factors that affect the health of the ecosystem

Main elements of the ecosystem analysis

ICT Infrastructure

This infrastructural layer affords a common set of conditions and digital resources in conjunction with nondigital resources that shape information flows and nurture the ecosystem when they are in balance.

Contemporary information ecosystems are constructed on digital technological infrastructures that are inclusive of platforms from prior eras (e.g. broadcast, print) and but are distinct in that they are uniquely generative, adaptive, and networked. The penetration of digital platforms and their economic, political, and infrastructural logic into the web and app ecosystems,[7] fundamentally affects the health of the ecosystem. The concept of infrastructure is important because infrastructures are ubiquitous, reliable, and durable and thus generate dependency and habituation within an ecosystem. Information providers, for example, are dependent on platforms for access to their networks, audiences, data, publishing protocols, advertising revenue, and funding, a dependency that influences editorial, organizational, and business choices in the media system.

Choices about how resources are devoted to Natural Language Processing, object recognition and other types of machine learning, or which data is collected and organized, are driven by business models, for example. AI and content moderation systems shape information production, flows, and voids. These resources and information flows also affect the keystone species and other elements of the information ecosystem, meaning that when they get out of balance, they can impact the health and resiliency of seemingly unconnected elements in the media system as well as the broader information ecosystem. For example, content moderation affects the visibility and viability of all types of digital media, as well as civil society organization and advertising, which affect whether information needs are being met and trust in the media system to meet them.[8]

Dynamic Conditions

Access and connectivity are key conditions that connect the infrastructural level with the rest of the system. The ability of humans to access information and connect to the internet, mobile networks, and media outlets are key conditions that affect the evolution and dynamism of the ecosystem; similarly the freedom and quality of internet access and connectivity more broadly are important conditions affecting the refraction of information and communication through the system.

Datafication and digitalization are conditions that make contemporary information more valuable, that create a feedback loop between the media system and the infrastructural layer of the information ecosystem.

This is the infrastructure upon which our media systems are constructed and maintaining balance in the ecosystem means considering how characteristics and shifts in this technological infrastructure affect keystone species.

The Media System is at the center of a healthy information ecosystem. It includes Entertainment media, User Generated Content, and non-fiction media like news, documentary, and educational media. The news media at the center of the media system can be analyzed along four key dimensions: editorial (content); the business or organizational aspects (institution); professionalism (norms/practices); and preparedness and

resiliency (people, institution, practices).

News media are anchor institutions in that they shape the flow and distribution of information in media systems as they gather, verify, analyze and report on events and issues that are relevant to their communities. They play a critical role in promoting transparency and accountability by holding those in power accountable. The characteristics, human and material factors, and dynamics affecting the health of these institutions are elucidated in the text.

Anchor institutions and the keystone species within them are vitally important to ecological survival of the ecosystem, without which it is likely to become unhealthy in ways that threaten its survival. Keystone species (KS) sculpt the environment and help create a habitable environment for many other types of species, and the absence of any of these keystone species can throw the system out of balance.

Keystone species exist at various levels of analysis.

- Media system is a keystone species within the info ecosystem (of a given locality)
- Non-fiction media and news specifically are keystone species within the media system
- Public interest media are keystone specieswithin the news ecosystem
- Within public interest media there are several keystone species. They include:
    - Public Service Media
    - Watchdog media
    - Investigative
    - Alternative media
    - Local media
    - National media

Although an imperfect term, "alternative" media are those that reflect the diversity and pluralism of the locality in which they are embedded, particularly those serving marginalized people and groups. Investigative media that interrogate power and watchdog media that hold those in power accountable to the public interest are similarly key species.

Diversity and pluralism along with transparency are characteristics of healthy systems and keystone species alike. Diversity is a key feature of healthy ecosystems, as pluralism is of free and independent media systems.[9] These closely related features are important to all elements of the media system, from business models and ownership, to norms and skills, to editorial aspects such as content and languages, to the digital infrastructures of each outlet. Species diversity is similarly important to healthy ecosystems.

Similarly, transparency is a key feature that is relevant to all aspects of the system and critical to cultivating trust among components of the system and with the humans involved. For example, editorial or ownership transparency are interrelated with UGC, trust (cultivating), and political interference (mitigating).

The Private sector, particularly advertising, is foundational to the business of media as are market research and audience measurement firms, which provide data and analysis needed to develop robust business models and understand audiences. Without market intelligence and the ability identify and understand audiences, the likelihood of developing sustainable revenue models or serving the informational needs of people and communities is limited.

Civil society provide spaces for community building and capacity building, norm development, advocacy, and protection. Keystone species that are part of the media system include independent, self-regulatory and professional bodies as well as press freedom monitoring groups. Academia provides both research and theory as well as a talent pipeline into the media system.

The public sector influences the broader environment in which the ecosystem exists and can nourish or starve it. The legal regulatory system and levels of internet freedom, for example, shape the media system and its keystone species as well as the link that people and communities have with the media system. Access to information and public funding for public service media contribute to healthy information ecosystems by combatting information voices and creating revenue sources for public interest media.

Other key factors that nourish information ecosystems are access to information and norms. The proactive provision of information flows through the ecosystem, creating data, providing fodder for public service media and watchdog media, and enacting transparency. Levels of trust in institutions and the media, for example, shape how information flows through the system and is received and interpreted by people and communities through their beliefs and based on their literacy levels.

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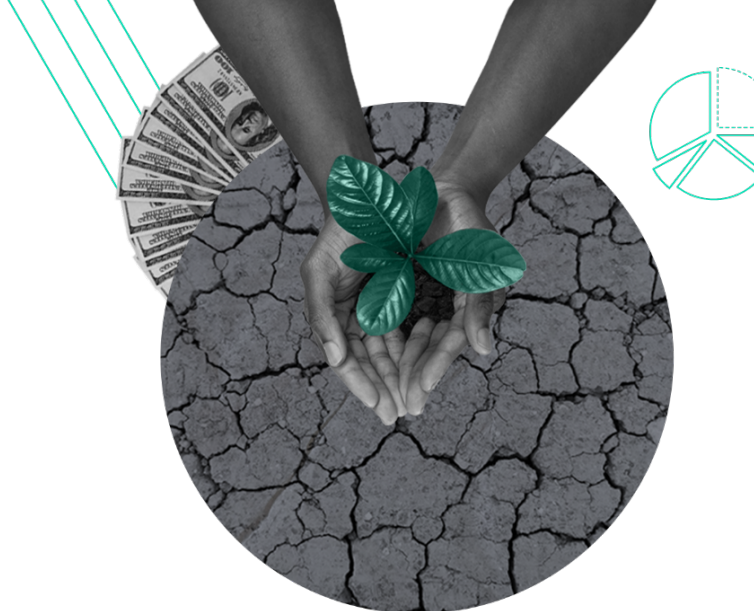

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References:

1 Nardi, B.A., and V. O'Day. Information Ecologies: Using Technology with Heart. Mit Press. MIT Press, 2000. https://books.google.com/books?id=6d1VwyZhQRQC.

2 Nischak et al.

3 A list of key references on ecosystem analysis is included in the appendix

4 Many of the studies, much of the programing, and an overwhelming number of interventions are focused on combatting disinformation or online harms rather than cultivating a health information ecosystem and all that entails.

5 Fabian Nischak, Andre Hanelt, and Lutz Maria Kolbe, "Unraveling the Interaction of Information Systems and Ecosystems - A Comprehensive Classification of Literature," Association for Information Systems AIS Electronic Library (AISeL), ICIS 2017 Proceedings, December 2017, http://aisel.aisnet.org/icis2017/General/Presentations/20. "Understanding Information Ecosystems: Making It Happen," UNHCR Innovation (blog), November 1, 2017, https://www.unhcr.org/innovation/information-ecosystems/.

6 People and communities are a critical part of the information ecosystem and much of the work on media ecosystems, and its more common contemporary fighting disinformation, center the citizen or community in an environmental approach that can include micro information ecosystems and is often focused on information needs. The focus is on cultivating individuals equipped with the skills, knowledge, and behavioral practices to access, evaluate, and use information from a variety of sources and avoid promoting disinformation. A significant proportion of current interventions related to disinformation and countering violent extremism therefore focus on media and information literacy capacity building or psychological and behavioral interventions at the individual or group levels that are rooted in a media effects paradigm. Others focus on improving journalism practice or skills, or on social media interventions, such as content moderation or labeling without addressing the political economy of the media systems in which these platforms are embedded or the sociotechnical factors that help keep it in balanced and thus healthy.

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