

An Overview Of E-government Concept

M. Al Kilani, V. Kobziev

*Kharkiv National University of Radio Electronics, Kharkiv, Ukraine
e-mail: moh_alkilani@yahoo.com; vgkobzev55@gmail.com*

Received September 21.2017: accepted November 20.2017

Abstract. E-government has become play an important role in improving government services, and increase effectiveness and efficiency in providing services. Many countries have become aware of the importance of adopting e-government project in improve services, reduce costs, and save time by providing the services anywhere at any time. E-government has become a tool to improving the economic aspect, administrative organization, and increase and trust between the government and beneficiaries.

The adopting of e-government requires a clear vision, and identifying all factors that contribute to its success. This paper will give an overview of e-government concept, and e-government around the world, also the paper will discuss the e-government domains, and e-government development life-cycle, as well as discussing the benefits and the challenges of adopts e-government project.

Key words: E-government, e-government domains, benefits, challenges.

INTRODUCTION

The development of information and communication technologies (ICT) makes it possible to successfully solve many new problems related to ensuring the stable development of enterprises [1], the countries [16], their individual regions [31], and also to create electronic information management systems of the state - E-government [29, 30].

To adopt e-government project successfully and achieve its goals, must understand government system in general, and identify the strengths and weaknesses of the government structure. Government system in general is mixture of goals, and functions. Understanding the government structure helps in clarifies all the challenges and obstacles that the government may face while implementing e-government project [8, 24].

Use information and communication technology as a tool to implement e-government is not a new concept, and most of the countries become aware of the importance of e-government to provide government services and interaction with citizens as well as improve efficiency of the administrative system and data gathering and storage [10]. E-government is one of the most important projects to achieve greater efficiency in government services by increased productivity of services for the citizens and investors, and provide more accurate, fast and effective services [4].

The adopting of e-government project is not just about building government's websites and providing e-services. There are many elements must taking into consideration, such as infrastructure, management, digital divide, security, privacy, strategy, culture and funding. All these elements play an important role in the success of e-government, and providing e-services as well as increasing confidence between the government and beneficiaries [22].

CONCEPTS OF E-GOVERNMENT

E-government is the use of the tools of information communication technology to improved beneficiaries service, and providing government services anywhere, as well as contribution to reorganization of the administrative structure into government institutions. E-government provides communication channels between government institutions which contributes significantly to provide services faster with low cost [7, 33].

Authors of [25] are stated that "E-Government or electronic government, also known as e-gov, digital government and online government is a governance method based on use of internet technology as a platform for exchanging information, providing services and transacting with citizens, businesses, and other arms of government".

On the other hand, E-government can be defined as a way to use the ICT tools to providing e-services through web-based Internet, and empowering organizations, citizens and businesses to convenient access to information and services. E-government play an important role in improve the quality of e-services, as well as increase the strengthening levels of democracy, transparency and beneficiary trust [7, 11]. It provides the ability of use the ICT tools into government system to achieve of improvement levels in various areas of government and improved interactions with citizens, and improve efficient government management [9].

The main concept of e-government can be describing in three keys:

- making internal administrative processes more efficient and effective,
- provide a greater access to government information and activities,
- the continuation of the development of e-government services.

E-GOVERNMENT DOMAINS

E-government as defined by the World Bank [30] and Ndou [18], it contains several of activities and services to different citizens and organizations in a variety of government services. E-government identified next four main elements for e-government interaction:

1. Government-to-Citizen (G2C) provides convenient online access to government services and retrieve needed information from the government sector from everywhere and at any time. That is what some observers perceive to be the primary goal of e-government to overcome possible time and geographic barriers. G2C provides the citizens the ability to be informed about laws, policies and regulations in e-government services, which contributes to increasing the trust and transparency between the citizens and government.

2. Government-to-Business (G2B) can be described as a non-commercial interaction between the government and business on the high level of efficiency and transparency. The government provides different services exchanged between government and the business such as policies, memos, rules and regulations of government. To business are offered various services, downloading application forms, registering businesses, obtaining permits, payment of taxes and many others.

3. Government-to-Government (G2G) is referring to the communication between the government and its components such as departments and attached agencies, which depend on the shared database. On another hand, G2G can be defined as the online communication and transactions between different levels of government (central, national, local government) to enhance the efficiency and efficacy of government components [4]. G2G make all the government levels working together efficiently and effectively to provide better services to the citizens and businesses, changing the culture of the community service.

4. Government-to-Employees (G2E) can be described as the providing specialized services that cater only for government employees. On another hand, G2E can be defined as the relationship between the government and employees, which would aim to cater employees through e-services, such as the provision of online training, applying online for an annual leave, paying utilities, etc.

Providing e-services environment to the employees contributes to saving time and effort for employees, and thus reflected on providing better services to the citizens.

E-GOVERNMENT DEVELOPMENT LIFE-CYCLE

E-government development life-cycle is the most important stage to achieve e-government goals and developing e-government services. Many studies noted that there are many differences between models on the perspective concerning the e-government life cycle [15, 7, 17], as illustrates in the table 1.

Authors of [27] defined that there are two keys of evolution e-government life-cycle, which are four evaluation aspects and four evaluation levels.

Evaluation aspects include organizational, infrastructural, political-sociological and economic aspects.

Evaluation levels include territorial-administrative unit level, sector policy level, organization level and project level.

Table 1. E-government models

Authors	Stages
Layne & Lee (2001)	1. Catalogue. 2. Transaction. 3. Vertical integration. 4. Horizontal integration.
Chen (2002)	1. Information. 2. Communication. 3. Transaction. 4. Transformation.
Moon (2002)	1. One way communication. 2. Two-way communication. 3. Transformation. 4. Vertical and horizontal integration. 5. Political participation.
Howard (2001)	1. Publish. 2. Interact. 3. Transact.
West (2004)	1. Billboard. 2. Partial service delivery. 3. Full integrated service delivery. 4. Interactive democracy with public outreach and accountability.
Andersen and Henriksen (2006)	1. Cultivation. 2. Extension. 3. Maturity. 4. Revolution.
Deloitte and Touch (2001)	1. Information publishing. 2. Official-two way transaction. 3. Multipurpose portal. 4. Portal personalization. 5. Clustering of common services. 6. Full integration and enterprise transaction.

However, each model has different stages and different based. For example, model Layne & Lee suggest that e-government has four stages for the success of e-services, which focus on the availability of the information online, providing online transactions and support, focusing on the integration of different systems and functionalities of government's services for different functions horizontally.

On other hand, model Andersen and Henriksen suggest Public Sector Process Rebuilding (PPR), focusing on the use of government front-end systems on horizontal and vertical integration, and the using of extensive intranet. It has different from Layne and Lee model in activity and is customer centric rather than on technological capability as illustrates in the Figure 1 [4, 19].

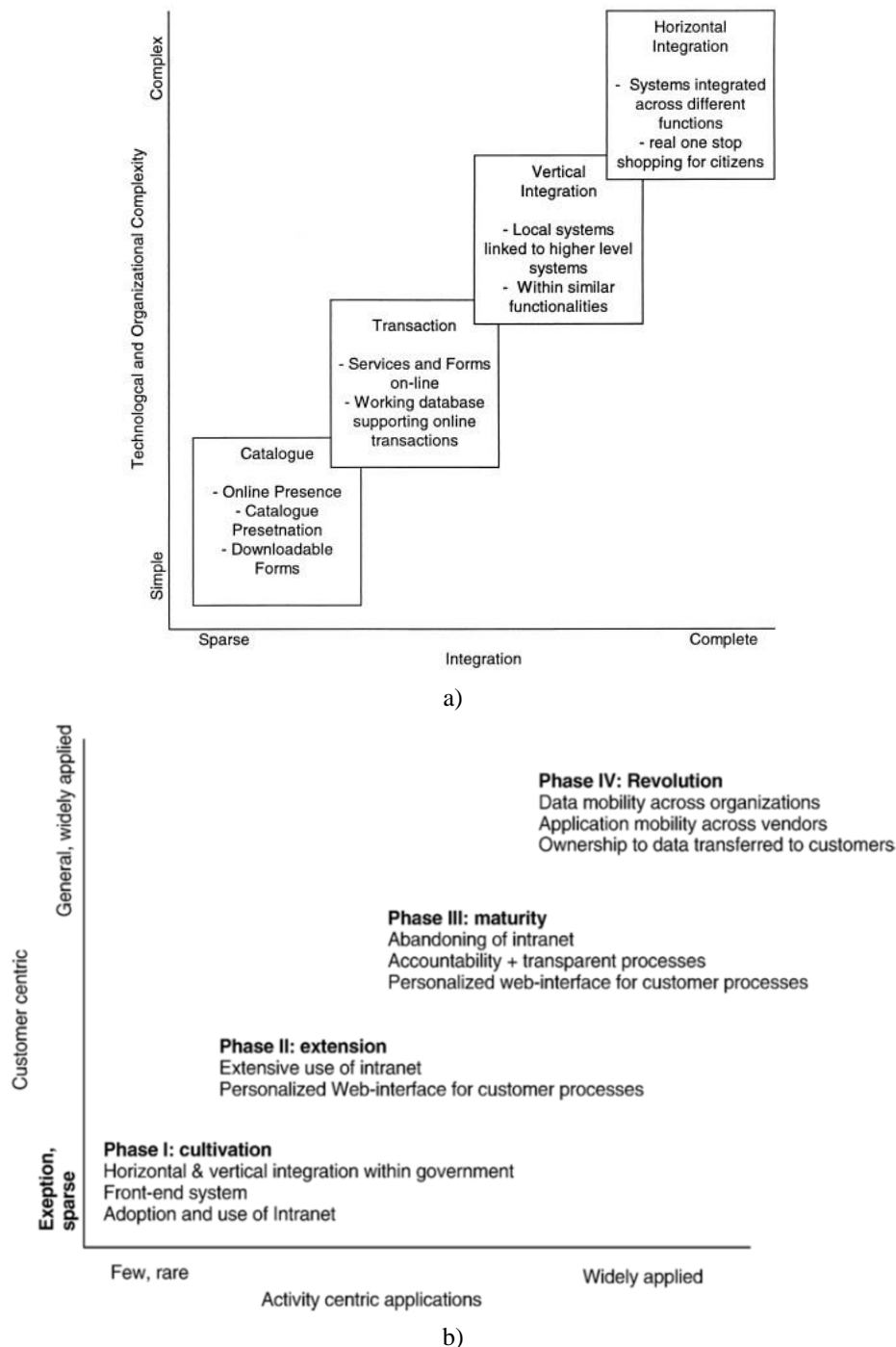


Fig. 1. E-government model development: a) The Layne and Lee model, b) The PPR maturity model.

AN OVERVIEW OF E-GOVERNMENT AROUND THE WORLD

E-government is providing online services to reducing costs and the time while providing better and more user-friendly services to the beneficiaries [24]. Integrating new technologic tools of ICT into the economic development strategy become an increasingly important tool in many countries around the world to providing public service. According to UN survey 2010 [28], many governments around the world have established websites in public organizations to provide public information to citizens (98% with website – 2% without websites).

However, despite the technological development, there are many emerging countries suffer from adopting ICT projects, and provide suitable ICT infrastructure for e-government services [2, 12]. Table 2 illustrates the Top 15 countries in e-government development 2016 (UN survey 2016) [29].

UN survey 2016 adopted in classification the previous table on three components:

- Online Service Index (OSI),
- Telecommunication Infrastructure Index (TII),
- Human Capital Index (HCI).

The following figure 2 shows the division of these components.

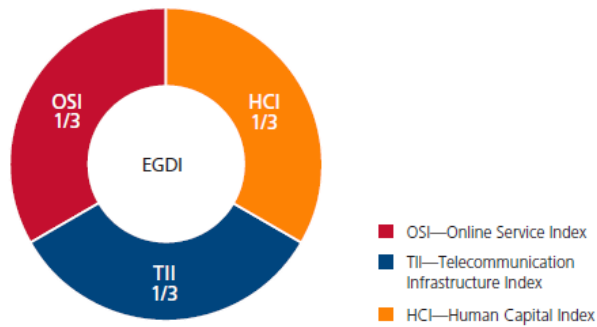


Fig.2. Components of the E-Government Development Index

In terms of e-government development, many countries believe the importance of e-government to improve the quality of services for citizens, therefore focused on continued developing e-government project.

Ukraine and Poland includes in Europe region. According to UN survey (2014), Ukraine has rank 87 and Poland has rank 42; while in UN survey (2016) Ukraine has rank 62 and Poland has rank 36. According to the results of UN survey (2016) [29] both countries, Ukraine and Poland, progress significantly in e-government development and e-government services.

Most of the Arab countries has less developed economically and ICT Infrastructure, and still face some difficulties in implementing e-government services in the public sectors; these difficulties are presented in technological aspect, environmental aspect and organizational aspect.

According to the UN survey (2016) [29], the Gulf countries are continuing developing e-government services and aim to increase public sector efficiency, and quick providing e-government services. The table 3 shows the achievements of Arab countries in e-government development.

Table 2. Top 15 countries in e-government development 2016 [29]

Country	Region	OSI	HCI	TII	EGDI	EGDI Level	2016 Rank	Ranking Trendline (2003 - 2016)
United Kingdom	Europe	1.0000	0.9402	0.8177	0.9193	Very high	1	
Australia	Oceania	0.9783	1.0000	0.7646	0.9143	Very high	2	
Republic of Korea	Asia	0.9420	0.8795	0.8530	0.8915	Very high	3	
Singapore	Asia	0.9710	0.8360	0.8414	0.8828	Very high	4	
Finland	Europe	0.9420	0.9440	0.7590	0.8817	Very high	5	
Sweden	Europe	0.8768	0.9210	0.8134	0.8704	Very high	6	
Netherlands	Europe	0.9275	0.9183	0.7517	0.8659	Very high	7	
New Zealand	Oceania	0.9420	0.9402	0.7136	0.8653	Very high	8	
Denmark	Europe	0.7754	0.9530	0.8247	0.8510	Very high	9	
France	Europe	0.9420	0.8445	0.7502	0.8456	Very high	10	
Japan	Asia	0.8768	0.8274	0.8277	0.8440	Very high	11	
United States of America	Americas	0.9275	0.8815	0.7170	0.8420	Very high	12	
Estonia	Europe	0.8913	0.8761	0.7329	0.8334	Very high	13	
Canada	Americas	0.9565	0.8572	0.6717	0.8285	Very high	14	
Germany	Europe	0.8406	0.8882	0.7342	0.8210	Very high	15	

Table 3. The Arab countries in e-government development 2016 [29]

Country	Region	Sub-Region	OSI	HCI	TII	EGDI	EGDI Level	2016 Rank	Ranking Trendline (2003 - 2016)
Bahrain	Asia	Western Asia	0.8261	0.7178	0.7762	0.7734	Very High	24	
United Arab Emirates	Asia	Western Asia	0.8913	0.6752	0.6881	0.7515	Very High	29	
Kuwait	Asia	Western Asia	0.6522	0.7287	0.7430	0.7080	High	40	
Saudi Arabia	Asia	Western Asia	0.6739	0.7995	0.5733	0.6822	High	44	
Qatar	Asia	Western Asia	0.6739	0.7317	0.6041	0.6699	High	48	
Mauritius	Africa	Eastern Africa	0.7029	0.7067	0.4596	0.6231	High	58	
Tunisia	Africa	Northern Africa	0.7174	0.6397	0.3476	0.5682	High	72	
Morocco	Africa	Northern Africa	0.7391	0.4737	0.3429	0.5186	High	85	
Egypt	Africa	Northern Africa	0.4710	0.6048	0.3025	0.4594	Medium	108	
Libyan	Africa	Northern Africa	0.1087	0.7588	0.4291	0.4322	Medium	118	

According to the ranks scores indexes of e-government development Bahrain, United Arab Emirates, Kuwait, Saudi Arabia, and Qatar ranked in the top of 50th in the terms of readiness of e-government services. The table above illustrates that the Bahrain and UAE has very high levels of ranking according to the EGDI level, and providing a high level of e-government services. The presence of 10 Arab countries among the top 100 countries in terms of the development of e-government give good indications that Arab governments aims to adopt modern ICT and providing e-government services.

BENEFITS OF ADOPTING E-GOVERNMENT

The main objective of transition to e-government is to change the traditional work system to be more flexible and providing the government services to beneficiaries at anytime and anywhere. E-government is providing tools of ICT to share information and deliver other services of government to the citizens [2, 10, 22]. The transition to e-government are contributing to build more transparency relationships with citizens and increased interaction between beneficiaries and government.

Donnell, Boyle, and Timonen in [10] noted, that e-government is a tools that allow domains of e-government (citizens, business, employees) to access to the information to complete necessary processes quick and easy, thus reducing time, effort and money. On other hand, Al-Khoury in [3] stated that the e-government is the merging of public and private sector and other organizations in a single web portal to reduce corruption, higher revenue and lower costs.

Many studies, such as [18, 13, 22], shows that the most common e-government benefits are:

1. Reducing the cost and the time as well as increased efficiency.
2. Increasing the transparency and confidence between the government and beneficiaries.
3. Improving the quality of government services.
4. Contribution to economic development.
5. Accessibility to the information anywhere at any time.

CHALLENGES AND OBSTACLES OF ADOPTING E-GOVERNMENT

The adoption of e-government project and providing e-service through web channel is not easy. The adoption of e-government is difficult task. It requires consideration of technical, social, organizational, and political aspects. The table 4 illustrates the content each of these aspects.

Adopting e-government is costly and requires consideration the above aspects to overcome the challenges and obstacles. These challenges and obstacles can be related at IT-infrastructure, security, a legal framework, and culture and highly skilled.

Authors of work [26] outlined that there are a number of challenges and obstacles hinder to implementing e-government and providing e-services, they include infrastructure development, digital divide, law and public policy, security, transparency and e-literacy.

Studies [4-6, 14, 18, 20] identified next barriers and challenges to adopting e-government:

ICT infrastructure	Lack of technology tools
Finance	Management support
Skills and capabilities	Strategy (vision and mission)
Political	Training
Human capital	Digital divide

Table 4. Challenges of adopting e-government project

Aspects	Challenge
Technical	IT standards
	Security
	Privacy
	Accessibility
	ICT infrastructure
Social	Awareness
	E-literacy
	Trust
	Authentication
	Culture
	Transparency
Organizational	Strategy
	Change management
	Resistance to change
Political	Leadership and top management support
	Legal and regulation issue
	Funding

Only well thought out and consistent work of a team of highly qualified specialists with the support of the current government can lead to overcoming these difficulties and the introduction of an e-government system with all its merits.

CONCLUSIONS

1. E-government can be a powerful tool to providing e-services to beneficiaries and improving quality of services, as well as increasing the interaction between the government and its domains (citizen, business and employees). The Main goals of adopting e-government project is reducing cost, time, efforts, increase transparency and improve government efficiency.

2. The article clarify the concept of e-government, as well as identified and discussed all the main aspects of e-government project, such as the domains of e-government, development life-cycle, benefits and challenges which contribute success e-government project. The study also dealt with overview of e-government level in the world.

3. Adopting e-government needs clear planning and identify all aspect that contribute to the success of e-government, as well as clarify timetable and taking into consideration the rapid developments in the field of information and communication technology and the e-services.

REFERENCES

1. **Alekseyev I., Khoma I., Shpak N. 2013.** Modelling of an impact of investment maintenance on the condition of economic protectability of industrial enterprises. *Econtechmod. An international quarterly journal*. Vol. 2, No. 2, 3–8.
2. **Alghamdi I., Goodwin R., Rampersad G. 2011.** E-government readiness assessment for government organizations in developing countries. *Computer and Information Science*, 4, 3–17.
3. **Al-Khoury A. 2013.** E-Government in Arab countries: a 6-staged roadmap to develop the public sector. *Journal of Management and Strategy*, 4, 80–107.
4. **Almarabeh T. 2010.** A general framework for E-government: definition maturity challenges, opportunities, and success. *European Journal of Scientific Research*, 39, 29–42.
5. **Al-naimat A., Abdullah M., Ahmad M. 2013.** The critical success factors for e-government implementation in Jordan. *Proceedings of the 4th International Conference on Computing and Informatics*, 391–98.
6. **Alsaeed A., Adams C. Boakes R. 2014.** E-government initiatives in middle-east arabic countries and Syria: literature review. *E-Gov Workshop'14, Brunel University, London, UB8 3PH*, 14, 27–38.
7. **Alshehri M., Drew S. 2010.** E-government fundamentals. *Proceedings of the IADIS International Conference on ICT, Society and Human Beings*, 35–42.
8. **Chuttur M. 2009.** Overview of the technology acceptance model: origins, developments and future directions. *Sprouts. Working Papers on Information Systems*, 9, 1–23.
9. **Dada D. 2006.** The failure of E-government in developing countries: a literature review. *Electronic Journal on Information Systems in Developing Countries*, EJISDC, 7, 1–10.
10. **Donnell O., Boyle R., Timonen V. 2003.** Transformational aspects of e-government in Ireland: issues to be addressed. *Electronic Journal of e-government*, Volume 1, 22–30.
11. **Drigas A., Koukianakis L. 2009.** Government online: an e-government platform to improve public administration operations and services. *WSKS*, 523–32.
12. **Dzhusupova Z. 2011.** Sustaining electronic governance programs in developing countries. *UNU-IIST Center for Electronic Governance, Macao, China*.
13. **Fenwick W. 2008.** The necessity of e-government. *Santa Clara High Technology Law Journal*, 25.
14. **Gichoya D. 2005.** Factors affecting the successful implementation of ICT projects in government. *Journal of e-government*, 3, 175–84.
15. **Ifinedo P., Singh M., Scotia N. 2011.** Determinants of e-government maturity in the transition economies of central and eastern Europe. *Electronic Journal of e-government*, Volume 9, 166–82.
16. **Kuzmin O., Shpak N., Pyrog O. 2016.** Model of sustainable development of the national economy of Ukraine: assessment of current state and prospects of development. *Econtechmod. An international quarterly journal*. Vol. 5, No. 1, 43–50.
17. **Makoza F. 2013.** The Level of e-government implementation: case of Malawi. *Electronic Journal of e-government*. Volume, 11, 268–79.
18. **Ndou. 2004.** E-government for developing countries: opportunities and challenges. *The Electronic Journal on Information Systems in Developing Countries*, 18, 1–24.
19. **Nkohkwo Q., Islam M. 2013.** Challenges to the successful implementation of E-government initiatives in Sub-Saharan Africa: a literature review research methodology. *Electronic Journal of e-government*, 11, 253–67.
20. **Olatokun W., Adebayo B. 2012.** Assessing e-government implementation in Ekiti state, Nigeria. *Journal of Emerging Trends in Computing and Information Sciences*, 3, 497–505.
21. **Pudjianto B., Hangjung Z. 2009.** Factors affecting E-government assimilation in developing countries. *SSRN Electronic Journal*, 1–14.
22. **Gera R., Parvej Y. 2012.** Improving the image of rural India through e-governance of Panchayats. *International Journal of Latest Research in Science and Technology*, 1, 30–35.
23. **Reffat Rabee M. 2006.** Developing a successful e-government, 1–13.
24. **Saadi M. Almahjoub A. 2012.** E-governance in Libya – where we are and where to go. *The International Libyan Conference on Electronic Government, Tripoli –Libya*.
25. **Saleknia A., Sarpoulaki M., Eslami A., A Director. 2008.** E-government concept and spatial information: a cfse study in islamic republic of Iran. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*. 19–24.
26. **Sharma G., Bao X., Peng L. 2014.** Public participation and ethical issues on E-governance: a study perspective in Nepal. *Electronic Journal of e-government*, 12, 82–96.
27. **Stanimirovic D., Vintar M. 2013.** Conceptualization of an integrated indicator model for the evaluation of e-government policies. *Electronic Journal of e-government*. Volume 11, 293–307.
28. **UN (2010).** E-government survey 2010: Leveraging e-government at a time of financial and economic crisis. *United Nations department of economic and social affairs division for public administration and development management. UNDESA and ASPA. New York*.
29. **UN (2016).** E-government 2016: E-government in support of sustainable development. *United Nations department of economic and social affairs*.
30. **World Development Indicators 2010.** *The World Bank*, 2010.
31. **Zhalezka B., Navitskaya K. 2015.** Multi-criteria fuzzy analysis of regional development. *Econtechmod. An international quarterly journal*. Vol. 4, No. 3, 39–46.
32. **Ziemba R., Papaj T. 2013.** A model of success factors for e-government adoption. *Issues in Information Systems*, 14, 87–100.