Exploring the Relationship between Partnership Model Participation and Interfirm Network Structure: An Analysis of the Office365 Ecosystem

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Outline

- Introduction to platform ecosystems

- Ecosystem governance and partnership models

- Research question

- Microsoft Office365

- Research approach

- Results

- Crafting propositions

- Discussion, conclusion and future research

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Industry platforms

A product, service or technology, that is **developed by one or several firms**, that serves as **a foundation** upon which **other firms** can build **complementary products**, services or technologies.
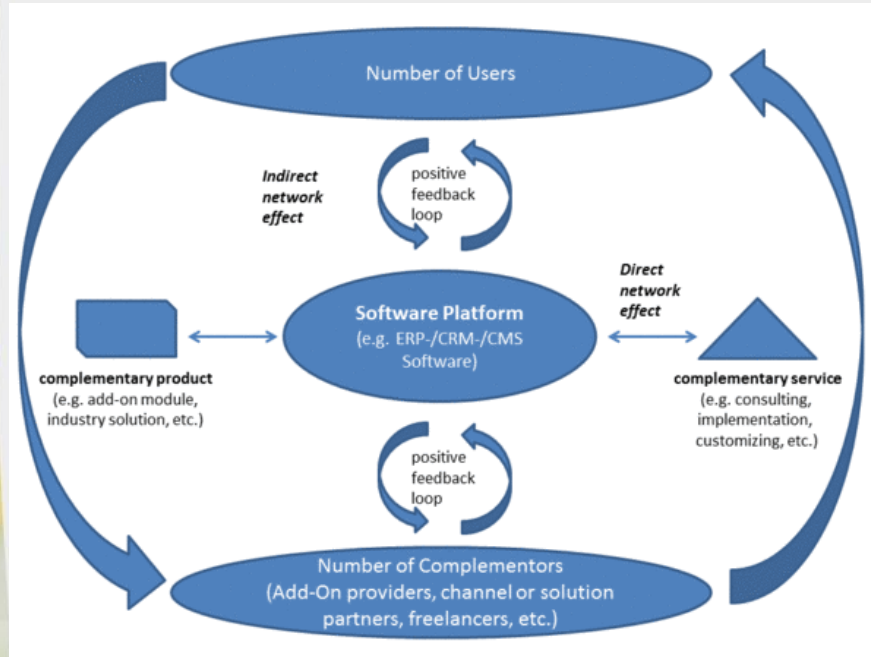
Gawer (2009)

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# Proprietary/commercial platform ecosystems

Cusumano (2010)

- **Proprietary software platform:** a software platform that is closed-source and owned by a single for-profit entity

- **Platform ecosystem:** all interlinked complementors or the interlinked set of products and services they develop

- **Members of a platform ecosystem are loosely coupled:** less formal interfirm relationships such as product certification, technological partnerships and shared marketing link complementors both among each other and to the platform owner

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Network effects and the role of the platform owner
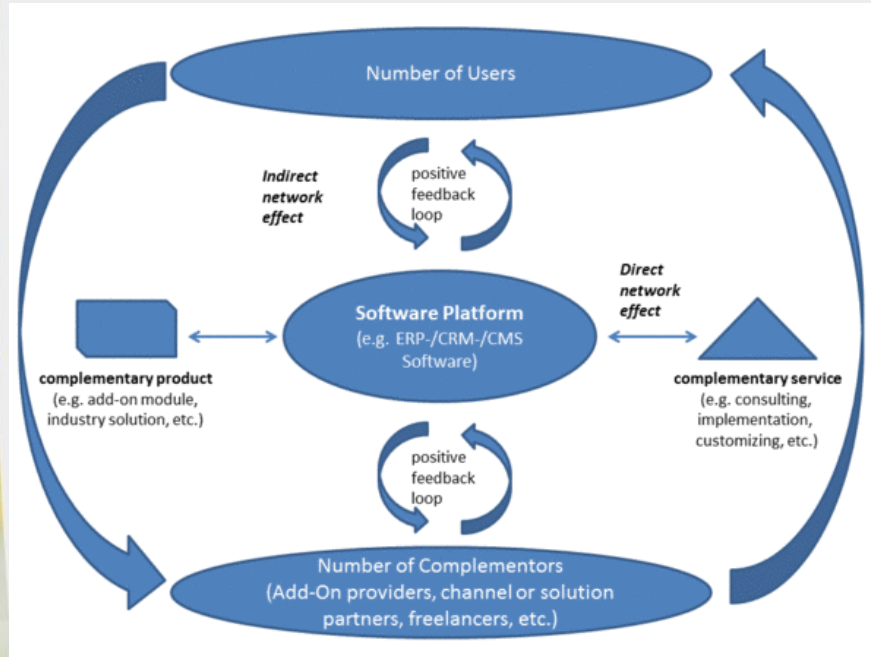
Cusumano (2010)

- Direct and indirect **network effects**
- Platform owner **depends on innovation speed** of complementors
- Platform owner has to **govern platform ecosystem** (niche creation, attract and retain complementors)

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Ecosystem governance

Ecosystem governance: procedures and processes by which a company **controls, changes or maintains** its current or future **position** in a software ecosystem.

Software (service) platform	
Community	**Private Entity**

Niche creation

Community	Private Entity
Expand applicability Make strategy explicit Create APIs Do co-development Contrib to comp. platforms	Expand applicability Make strategy explicit Create APIs Do co-development Dev. complementary platforms Develop new business models

Robustness

Community	Private Entity
Form consortium Grow consortium Create subgroups Raise entry barriers Form alliances Stabilize APIs Make consortium explicit Open up governance	Create partnership model Do marketing Grow profits Partner development programs Form alliances Stabilize APIs Raise entry barriers Make partners explicit Propagate operation knowledge

Productivity

Community	Private Entity
Organize dev days Create knowledge hubs Participate in contests	Organize dev days Collaborative marketing Create sales partner program Create new sales channels

Jansen and Cusumano (2013)

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Partnership models

- Complementor pays (e.g., monetary fees, requirements) to fulfill role as partner in the Microsoft Certified Partner Network
- Predefined benefits attract potential partners to join
- **Locus of control**
  - Product certification
  - Partner development
- **Fosters lock-ins**
  - Enforce platform exclusivity
  - Relational lock-in (strong tie with Microsoft)

Microsoft Partner

Gold Customer Relationship Management
Gold Small Business
Gold Midmarket Solution Provider
Gold Volume Licensing

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Triggers and relevance

- **Triggers:**
  - Little research on ecosystem governance, the **effect of ecosystem governance processes** remains **unknown**
  - Little research considers **proprietary platform ecosystems**
  - No insight into the extent to which **complementors interact**
- **Relevance:**
  - Develop a **method to visualize and analyze** proprietary platform ecosystems
  - Insight into the **factors that shape the structure** of proprietary platform ecosystems
  - Aid **platform owners** in **analyzing their own ecosystem** and the assessing impact that their ecosystem governance might have

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Research question

What is the influence of complementor lock-ins on the network structure of a proprietary platform ecosystem?

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Microsoft Office365

- **The platform:** cloud-based productivity suite
- **Contains:** individually customizable versions of Microsoft Exchange, Microsoft Lync, Microsoft Office, Microsoft SharePoint
- **Intended for:** small to medium-sized enterprises, governmental and educational institutions
- **Examples of third-party application development:** integration with other platforms, cloud migration functionality, CRM and ERP, business templates for Microsoft Office
- **App store:** Office365 Marketplace (Part of the bigger Microsoft PinPoint app store)

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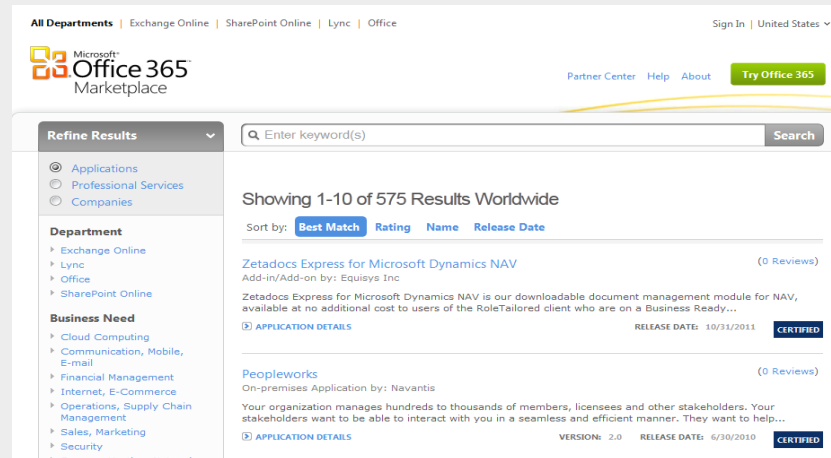
Data collection

- **Identification of Microsoft Office365 complementors:**
  - Automated data extraction from the **Office365 Marketplace** by means of a web crawler
  - Iterative retrieval from **global and 59 regional versions** of the Office365 Marketplace
  - Applications listed under category **'Applications'**, professional services and on-premises apps were excluded
  - Manual cleansing of dataset to remove or merge duplicated entries: Mostly duplicated listing of applications (**global and regional**)
- **Identification of interfirm relationships:**
  - Obtained by means of **manually traversing complementor websites**, usually mentioned under **'Partner'** tab and **CrunchBase**
  - Interfirm relationships treated as **symmetric ties** ($a^{ij} = a^{ji}$)
  - Identified relationships maintained in adjacency matrix

1: presence of interfirm relationship
0: absence of relationship

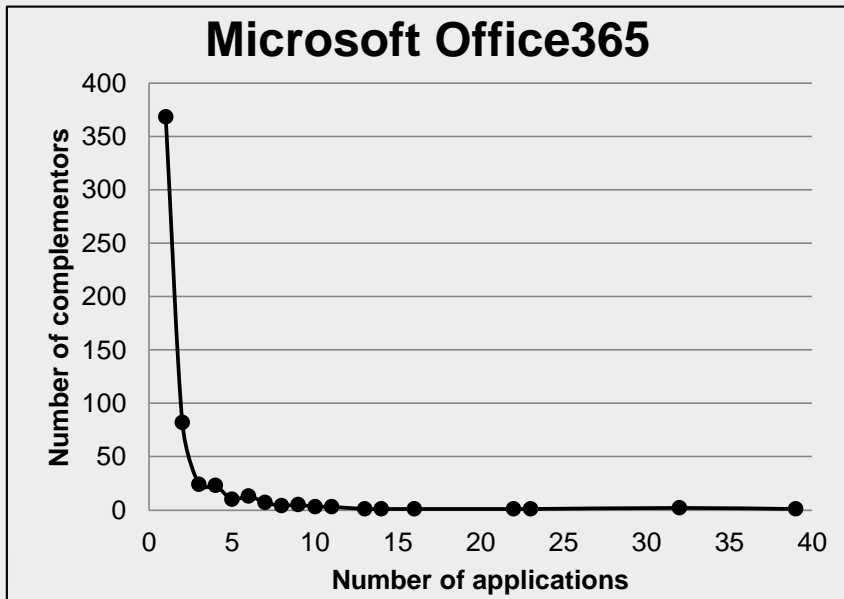|	Google	Zoho Corp.	SaaSt	Top-Solutions	Cloud-Work	ekto-sym	florey-soft
Google	-	1	1	1	1	1	1
Zoho Corp.	1	-	0	1	0	0	0
SaaSt	1	0	-	0	0	0	0
TopSolutions	1	1	0	-	0	0	0
CloudWork	1	0	0	0	-	0	0
ektosym	1	0	0	0	0	-	1
floreysoft	1	0	0	0	0	1	-

Van Angeren et al. (2013)

Data analysis

- Inductive and exploratory study

- (Social) network analysis (**nodes** represent members of the ecosystem, **edges** represent the interfirm relationships among them)

- Statistical inference

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Descriptives

Microsoft Office365

Chart: X-axis "Number of applications" (0–40), Y-axis "Number of complementors" (0–400)

- Data collected at **13-02-2013**
- **1204** applications
- **550** complementors
- Microsoft itself **does not** enter complementary markets
- Average of **2.18 applications per complementor** (Std. Dev 1.65)
- **50.50% (278)** complementors participates in Microsoft Certified Partner Network

The Microsoft Office365 ecosystem
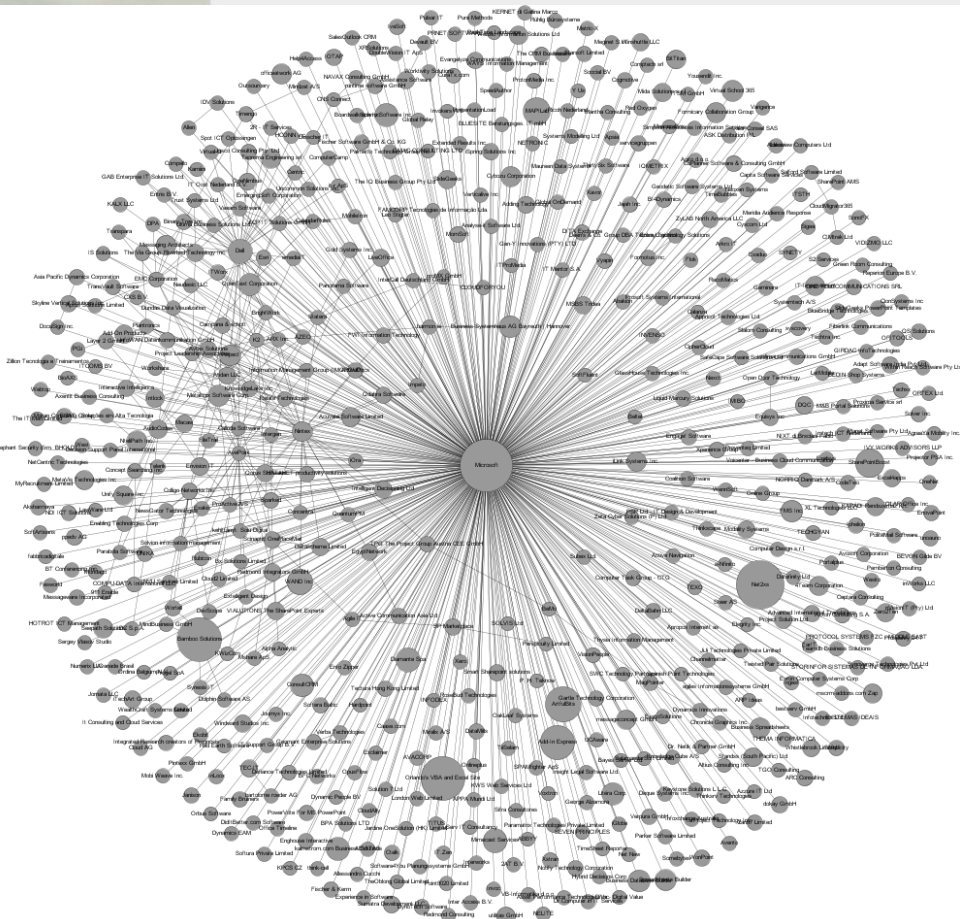
- **787** interfirm relationships
- Average of **1.43 interfirm relationships per complementor**
- **Hub-and-spoke** network topology
- Small number of well connected complementors

Metric	Min.	Max.	Avg.	Std. dev.
Degree centrality	0.00183	1	0.00519	0.0427
Clustering coefficient	0.00215	1	0.773	0.228

Metric	Value
Size	551
Network density	0.00500
Centralization	0.9984
Modularity	0.336
Clustering coefficient	0.773

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Underlying network topology
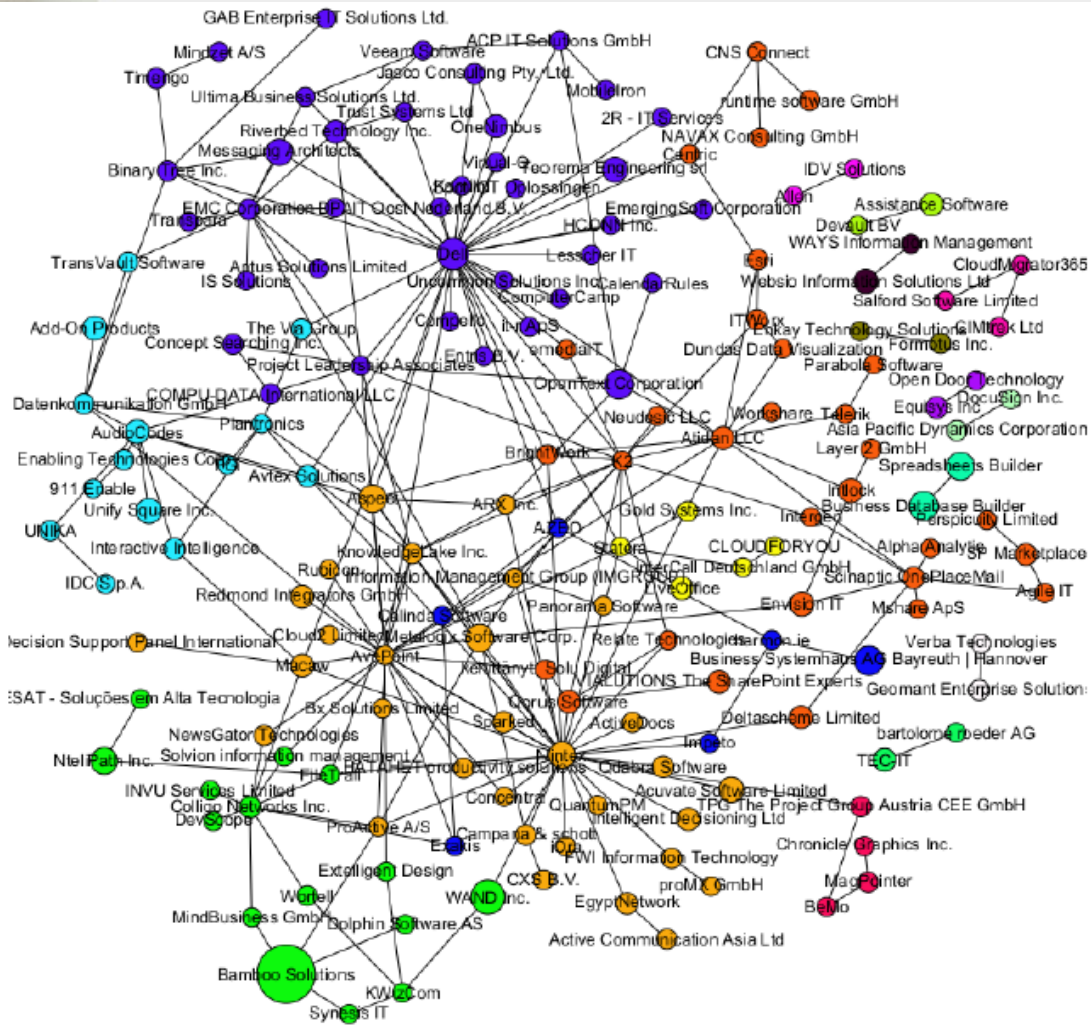
- Data cleansing to uncover **network topology underneath hub-and-spoke network**
- Cleansing steps:
  - Remove **actors solely connected** to **Microsoft**
  - Remove **Microsoft**
- Cluster detection by means of the modularity algorithm (Blondel et al., 2008)
- Apart from the dyads on the right side of the figure, **clusters are interconnected**

Analysis: Complementor productivity and embeddedness

- More productive complementors are better embedded

- Increasing development activity and growing number of interfirm relationships coincide **(positive correlation)** because:
  - **Principal complementor:** access to resources, exert influence
  - **New entrant:** tie with principal complementor increases market visibility, achieve chain of interoperability
  - **The platform owner benefits:** increased stability of the ecosystem, relational lock-ins

Relevant descriptives

Average # of applications	% of complementors with 1 application	Average # of relationships	% of complementors with relationships
2.18	66.85%	1.43	29.82%

Correlations

		# of applications	# of relationships
# of applications	Pearson Correlation	1	.131**
	Sig. (2-tailed)		.002
	N	550	550
# of relationships	Pearson Correlation	.131**	1
	Sig. (2-tailed)	.002	
	N	550	550

**. Correlation is significant at the 0.01 level (2-tailed).

Proposition: The number of applications developed by a complementor will be positively related to the number of interfirm relationships that it initiates.

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(Iansiti & Levien, 2004; den Hartigh, Tol & Visscher, 2006; Gawer, 2009; Cusumano, 2010; van Angeren 2013)

Analysis: partnership model participation

- **Partner development** by Microsoft as means to **foster** complementor **interconnectivity** and **productivity?**
  - **Interconnectivity:** developer and partner conferences, partner directory, active matchmaking between partners by Microsoft, …
  - **Productivity:** Niche creation, access to customers, co-creation between partner and Microsoft, sales partner program, …
- Complementor **age** (date since publishing first application in Office365 Market-place) **not significantly different across groups**

Relevant descriptives

Average # of applications	Average # of relationships	Partnership model coverage
2.18	1.43	50.50%

Independent samples t-test

Variable	Group	N	Mean	Std. Dev.	t	Sig
Age of complementor (in years)	Partner	175	2.693	0.856		
	Non-partner	175	2.588	1.056	0.593	0.728

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(Popp, 2010; Boudreau 2012; van Angeren, Kabbedijk, Popp & Jansen, 2013; Jansen & Cusumano, 2013)

Analysis: partnership model participation

- **Partner development** by Microsoft as means to **foster** complementor **interconnectivity** and **productivity?**
- Independent samples t-test:
  - **Relationships:** Microsoft partners have significantly more interfirm relationships
  - **Applications:** Microsoft partners do not develop significantly more applications
- Partner enablement **positively related to network density**, while **developer scope** remains **unaffected**

Proposition: Fostering complementor lock-ins will be positively related to the network density of a proprietary platform ecosystem.

Proposition: Fostering complementor lock-ins will not influence the productivity of a proprietary platform ecosystem.

Independent samples t-test

Variable	Group	N	Mean	Std. Dev.	t	Sig
# of relationships	Partner	278	1.192	2.925		
	Non-partner	272	0.522	2.509	2.895	0.004***
# of applications	Partner	278	2.313	3.351		
	Non-partner	272	2.063	3.390	0.871	0.384

***, correlation is significant at $p < 0.001$

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(Popp, 2010; Boudreau 2012; van Angeren, Kabbedijk, Popp & Jansen, 2013)

Discussion and conclusion

- The Microsoft Office365 ecosystem is a **hub-and-spoke network**

    - **550** complementors that developed **1204** applications (2.18 applications per complementor)

    - **787** initiated interfirm relationships (1.43 per complementor)

- The number of applications a complementor develops is positively related to the number of interfirm relationships it initiates

- **Lock-ins**

    - Are **positively related to the network density** a proprietary platform ecosystem

    - Appear to be **unlikely** to force complementors **beyond their development scope**

- Limitations

    - Reliance on proprietary sources: Not all complementors provide access to partner listings

    - Alternative explanations for observed effects, influence of established SharePoint developers (on-premises platform launched in 2001), (im)maturity of the ecosystem, multi-homing

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Directions for future research

- Inclusion of service providers for *'structural hole analysis'*: **niche detection for service providers in the ecosystem**

- **Longitudinal studies** of platform ecosystems to observe **causal effects**

- **More fine-grained exploration** of platform ecosystems (e.g., multiplex perspective on interfirm relationships, multiple measures for governance, …)

- **Comparison** of multiple platform ecosystems (e.g., similar platform, same platform owner, same governance, different governance, …)

- Towards **automation of ecosystem analysis** to aid practitioners in selecting and analyzing ecosystems

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