

Coopetition with Frenemies: Towards Modeling of Simultaneous Cooperation and Competition

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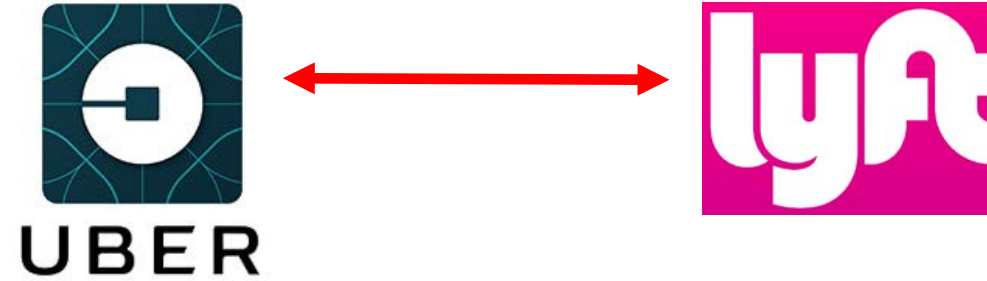
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Agenda

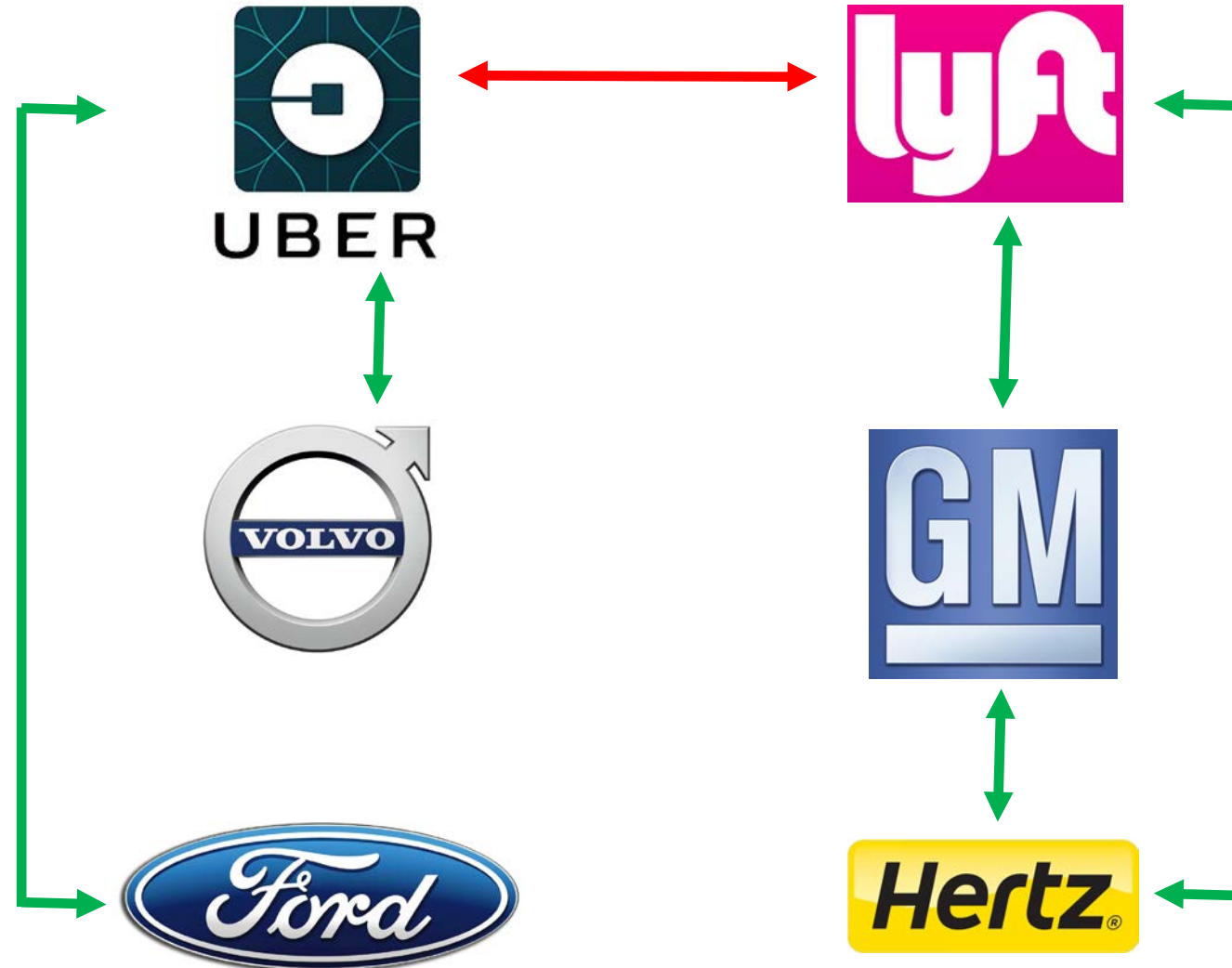
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3. Emerging Requirements For Modeling Enterprise Coopetition
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 3. Tensions in Paradoxical Relationships
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1. Introduction

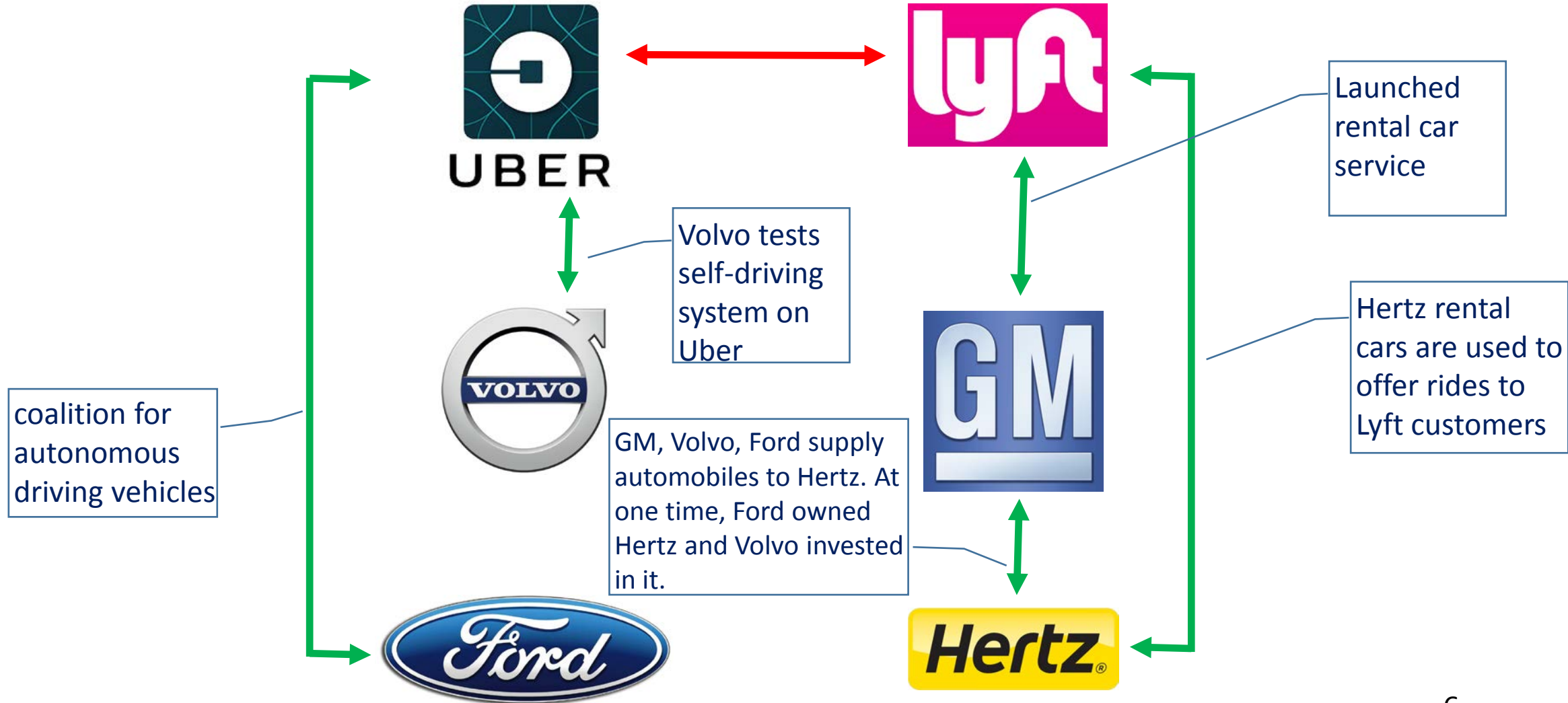
Multifaceted Relationships Among Digital Natives



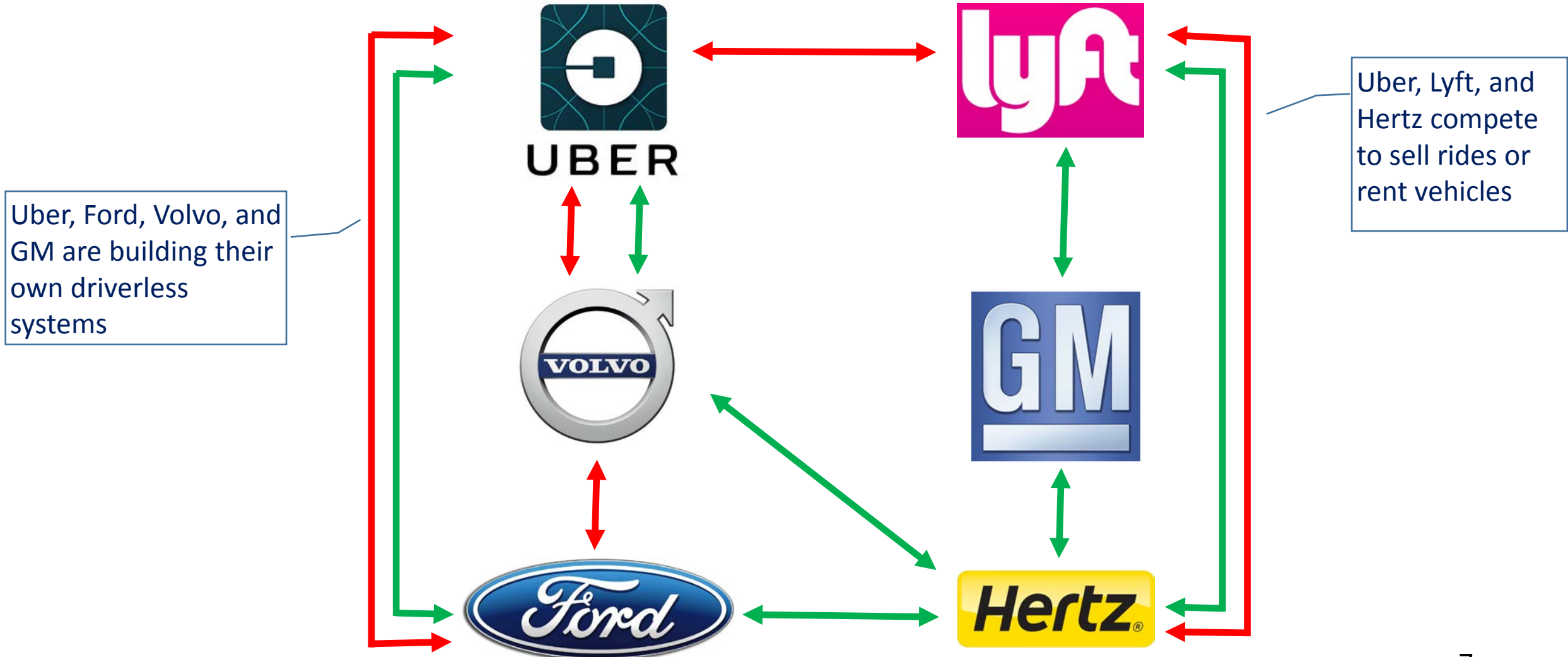
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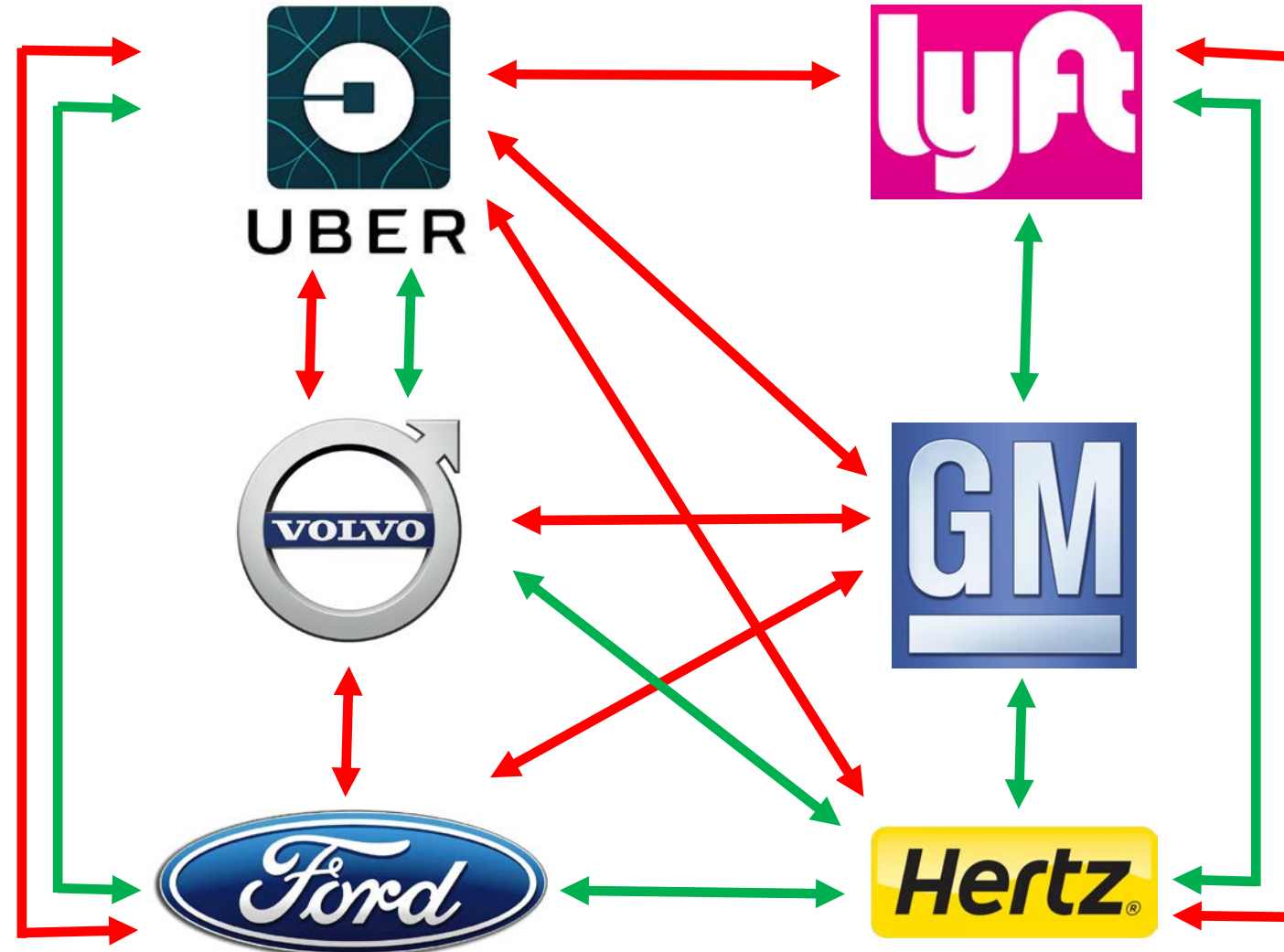
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Multifaceted Relationships Among Digital Natives



Related Work - Conceptual Modeling of Organizational Strategy

- Enterprise and business modeling employ concepts such as goal, actor, value, process, etc.).

Johannesson, P. (2007).

- Modeling and evaluating organizational strategy.

Giannoulis et al. (2011); Weigand et al. (2007);

Gordijn et al. (2006); and Osterwalder et al. (2005).

- Goal- and Actor-Oriented Requirements Engineering (RE) approaches to model and analyze business strategy.

López & Franch (2014); Paja et al. (2016); and Carvallo & Franch (2012).

- None of these approaches have focused directly on the phenomenon of coopetition

- Coopetition impacts strategy (goals, tasks, resources, boundaries, etc.).

Coopetition in the age of Digital Transformation - impacting Information Systems Design

- **Digital transformation** refers to nexus of forces and confluence of phenomena that are **disrupting industries** and **reshaping markets**.
- Organizations are having to **simultaneously cooperate with their rivals while competing with their partners**.
- IS researchers have emphasized the need for aligning information system (IS) design with organizational strategy so that **information systems** help to satisfy **business requirements**.
- A **systematic and structured approach** is needed for **representing and reasoning about strategic **coopetition** among organizations**.
- This approach will **impact design of IS** for knowledge management, organizational learning, service orientation and encapsulation, as well as compliance and governance.

Why use Requirements Engineering techniques to model and analyze Organizational Relationships

- **Coopetition** refers to **simultaneous cooperation** and **competition**.
 - “increasingly popular in recent years” - Gnyawali & Park (2009).
 - “an integral part of many companies’ daily agenda” - Bengtsson & Kock (2014).
- Some research papers in the **RE literature** have discussed **competition** and **cooperation** between enterprises.

Giannoulis et al. (2011); and Liu et al. (2009).

- **Many characteristics** of these **strategic behaviors** are **unexplored** in the enterprise modeling literature.
- These gaps “make it difficult for requirements engineers to **validate low-level requirements** against the **more abstract high-level requirements** representing the **business strategy**”.

Bleistein et al. (2004).

2. Enterprise Cooperation, Competition, And Coopetition - background

Competitive View in Organization Theory

- **Organizational Theory** (OT) is an academic discipline that is concerned with the structure, behavior, and performance of organizations.

Baysinger (1991); and Pugh (1966).

- OT emerged in the 1950s as an explanation of the **strategic dynamics** between firms in **competitive industries**.

Linstead, et al. (2008).

- It was closely related to Bain's SCP (structure, conduct, performance) paradigm
 - The performance of a firm was determined by its conduct
 - The conduct of a firm was impacted by various industry factors.

Bain (1956).

- Starting in the late 1970s, **Porter** popularized this view through his advancement of **economic theories** of “competitive advantage”.

Porter (1979); Porter (1981); and Porter (1991).

- As such, for the first thirty years, this **competitive view** of organizational strategy became the **dominant paradigm** in OT research.

Cooperative and Collaborative View in Organization Theory

- The “militaristic” **competitive view** in OT was **challenged** throughout the 1980s and 1990s by management researchers.
- These management researchers argued in favor of “cooperative advantage” and “collaborative advantage”.

Ketelhöhn (1993); and Lado et al. (1997).

- This stream of research posited that firms could **improve their performance** and **increase their profits** by **partnering** with other firms.
- Dyer and Singh promoted the notion of “relational rents” as **profits** that were generated through **relationship-specific idiosyncratic** assets and resources.

Dyer & Singh (1998).

Why cooperate / collaborate?

- Many **rationales** and **justifications** were offered for inter-firm relationships such as **strategic alliances**.
- These included the ability for partner firms to
 - **Acquire knowledge.** - Jiang & Li (2009).
 - **Share risks.** - Das & Teng (1996).
 - **Access markets.** - Gebrekidan & Awuah (2002).
 - **Spread costs.** - Todeva & Knoke (2005).
 - **Pool resources.** - Koza & Lewin (2000).
 - **Achieve strategic objectives.** - Inkpen & Ross (2001).

Disagreements Between Prominent Views

- By the mid-1990s, the field of OT was divided into **two camps** that offered **incompatible** and **divergent explanations** of inter-firm behaviors.
- The **competitive** camp argued that **cooperation among rivals** led to
 - Collusion or cartelization.
 - Market failure through the creation of deadweight loss.
 - Reduction of consumer surplus.
 - Obviation of incentives for innovation.
- The **cooperative** or collaborative camp argued that **competition among partners** led to
 - Mutually destructive outcomes.
 - Promotion of distrust/mistrust.
 - Reduction of goodwill.
 - Persistence of disequilibrium in the market.
- It seemed that only an **esemplastic theory** could **resolve** the **creative tension** between these camps.

Coopetition Theory

- Proposed as a **syncretistic means** for **reconciling** the **competitive** and **cooperative perspectives**.
Padula & Dagnino (2007).
- **Introduced** in 1995 by two **economists** - a **game-theoretic lens** for interpreting inter-firm behaviors.
Brandenburger & Nalebuff (1995; 1996;1997).
- a **prominent field** of scholarly inquiry in the two decades since its introduction
 - **literature reviews** Walley (2007); Dorn et al. (2016); Bengtsson & Raza-Ullah (2016); Bouncken et al. (2015); Gast et al. (2015); and Czakon et al. (2014);.
 - **special issues** Roy & Czakon (Eds.). (2016); Dagnino (Ed.). (2007); and Baglieri et al. (Eds.) (2008).
 - **Empirical fieldwork** – explore “the antecedents-process-outcomes trail”. Lado et al. (1997); and Czakon et al. (2014)
- Influence beyond economics on other disciplines including
 - **political science, diplomacy, and civics**. Fleisher, C. S. (2001); Alber et al. (2006); and Racine, D. (2003).

Coopetition In Practice

- **Competition** and **cooperation** are **diametric social behaviors** that are undergirded by opposite logics and assumptions.

Bengtsson & Kock (2000).

- Their co-occurrence in any relationship represents a **paradox** that **creates tensions** between the coopeting actors.

Raza-Ullah et al. (2014).

- **Different degrees** of cooperation and competition can co-exist within **vertical** (i.e., buyer-supplier) as well as **horizontal** (i.e., firm-to-firm) relationships.

Bengtsson et al. (2010; 2000); and Dowling et al. (1996).

- Moreover, coopetition can occur within a **dyad** (i.e., between two actors) or in a **network**.

Czakov et al. (2014).

Forms of Coopetition

- **Dyadic coopetition** necessitates direct coopetition between **two actors**.
 - can be regarded as **procedural coopetition** where **activity** is an appropriate unit of analysis.

Rusko (2012).
- **Network coopetition** enables **direct** as well as **indirect coopetition** (i.e., via an intermediary).
 - can be regarded as **contextual coopetition** where **actor** is a suitable unit of analysis.

Rusko (2014).
- Coopetition is also a **multi-level phenomenon**
 - An actor may exhibit different behaviors at different levels (i.e., within a dyad or network).

Chiambaretto & Dumez (2016).

Strategic Competition

- A number of **theories** have been proposed to **explain** the **nature** and **characteristics** of **strategic competition** between enterprises.
 - Industrial Organization
 - Chamberlinian
 - Schumpeterian

Barney (1986).

- Henderson (1983) claims that “there is no reason to think of business competitive systems as different in any fundamental way from other biological competition”.
- This view posits that much like biological competition (between organisms) **economic competition** (between enterprises) occurs due to **resource conflicts**.

Henderson (1981).

- Indeed, this view is in line with a functional definition of economics as the “study of the allocation of ‘scarce’ resources among competing ends”.

Chiswick (2009).

- This means that actors (enterprises), goals (ends), and resources (means) are pertinent for the modeling and analysis of strategic competition between enterprises.

3. Towards Requirements For Modeling Enterprise Coopetition

Requirements for Expressing Strategic Coopetition

Characteristics	Features	Key	Description for Modeling Support
Actor	2 Actors or Dyad	A1	Two actors with links between them.
	>2 Actors or Network	A2	More than two actors with links between them.
	Actor Intention	A3	Internal intentional structure of actor(s).
Complementarity	Resource/Asset/Object	C1	Entity associated with some value, benefit, or utility.
	Value Added	C2	Incremental addition of some value, benefit, or utility.
	Added Value	C3	Worth of an actor in terms of value, benefit, or utility.
Interdependence	Positive Dependency	I1	Existence of dependency(ies) between actors.
	Negative Dependency	I2	Non-existence of any dependency between actors.
	Strength of Dependency	I3	Magnitude of dependency (however measured).
Trustworthiness	Goal Convergence	T1	Agreements between goals within and across actors.
	Goal Divergence	T2	Conflict between goals within and across actors.
	Compliance	T3	Evaluation of abidance with terms and conditions.
Reciprocity	Activity or Task	R1	Individual (step) or collection (process) of actions.
	Sequence	R2	Transition from predecessor to successor action.
	Condition	R3	Constraints or restrictions on actions.

1. Complementarity

- Complementarity refers to the combined returns from the combination of two or more assets, with some combinations resulting in higher value creation than other combinations. Tee & Gawer (2009).
- **Synergy**: the whole is greater than the sum of its parts
- Some ways through which firms develop complementarities with their partners
 - Overlap avoidance. – Khamseh & Jolly (2014).
 - Knowledge protection. – Haeussler et al. (2012).
 - Development of common objectives. – Martinelli & Sparks (2003).
- Example: Sony and Samsung have multifaceted dealings - a cooperative relationship based on complementary R&D and manufacturing skills. Gnyawali & Park (2011)

2. Interdependence

- the extent to which work processes that have strategic implications are interrelated.“
Luo (2005)
- Firms are typically incented to become mutually reliant when they have “partially congruent interest structures”.
Castaldo & Dagnino (2009).
- **Interdependence fosters coopetition** because it ensures that “each competitor will have a specific individual interest in carrying out an agreement”.
Garraffo & Rocco (2009).
- Some ways through which firms can become more interdependent with each other.
 - Investing in relationship-specific assets. – Paché & Medina (2007).
 - Interconnecting resources. – Wieland & Marcus Wallenburg (2013).
 - Knowledge sharing. - Baumard (2009).
- Bengtsson & Kock (2000) observed such coopetitive interactions between a number of European firms in the rack and pinion as well as lining industries.

3. Trustworthiness

- “Trust refers to the expectation that another business can be relied on to fulfill its obligations.”
Hutchinson et al. (2012),
- It “is expected to reduce the level of potential and actual opportunism” through “(a) impartiality in negotiations, (b) trustworthiness, and (c) keeping of promises”.
Judge & Dooley (2006); and Bouncken & Fredrich (2012).
- Barney & Hansen (1994) claim that, “while trust is an attribute of a relationship between exchange partners, trustworthiness is an attribute of individual exchange partners”.
- Some **techniques** through which firms can **grow their trustworthiness**.
 - Increasing communication. - Zach, F. (2013).
 - Avoiding coercion. – Jain et al. (2014).
 - Increasing linkages. – Park et al. (2014).
- Fernandez et al. (2014) identified trust as a “key factor for success of co-opetitive strategies” through an empirical study of the telecommunications satellite industry in Europe.

4. Reciprocity

- “Reciprocity is defined as rewarding kindness with kindness and punishing unkindness with unkindness.”
Ashraf et al. (2006).
- A social actor should “expect this behavior from others” because “reciprocity is a rather stable behavioral response by a non-negligible fraction of the people”.
Sobel, J. (2005); and Fehr & Gächter (2000).
- Reciprocity has been studied in depth in economics and game theory as a means to enforce cooperative behavior.
Lee et al. (2010)
- As such, it is commonly used in [game theory](#) to [explain social behavior](#) in sequential move games such as ultimatum game and gift-exchange game.
Falk & Fischbacher (2006).
- In fact, such behavior is not limited to games and has been observed in the industry by Krämer et al. (2016).

Can existing approaches model Strategic Coopetition?

Technique	A1	A2	A3	C1	C2	C3	I1	I2	I3	T1	T2	T3	R1	R2	R3
NFR Framework	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✓	✗	✗
i* Strategic Rationale	✓	✓	✓	✓	✗	✗	✓	✗	✗	✓	✓	✗	✓	✗	✗
KAOS	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✓	✗	✓	✓	✓
e3Value	✓	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗
Business Model Canvas	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗
Value Network Analysis	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Game Tree	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗
Payoff Table	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗
Change Matrix	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗

Technique	A1	A2	A3	C1	C2	C3	I1	I2	I3	T1	T2	T3	R1	R2	R3
NFR Framework	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✓	✗	✗
i* Strategic Rationale	✓	✓	✓	✓	✗	✗	✓	✗	✗	✓	✓	✗	✓	✗	✗
KAOS	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
e3Value	✓	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Business Model Canvas	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Value Network Analysis	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Game Tree	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Payoff Table	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Change Matrix	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

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4. Conclusions And Future Work

Ongoing and Future Work

- Ongoing work
 - Identify and catalog the requirements for modeling cooperation, competition, and competition.
 - Assess the adequacy of extant modeling languages for satisfying those requirements.
 - Address the shortcomings of individual modeling languages for satisfying these requirements.
- Future Validation
 - Obtain feedback from management practitioners and industry specialists.
 - Test the framework in the field by collaborating with industry partners.

Conclusion

- Coopetition is prevalent in a number of industries. Baglieri et al. (2012)
- Roughly 50% of strategic alliances are between competitors. Harbison & Pekar (1998)
- In spite of its prominence, coopetition has not been explored in the EM literature.
- We intend to develop a modeling framework that is suitable for representing cooperation, competition, and coopetition.

THANK YOU

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