Distinguishing Crowd Dynamics in Small Teams:
A Crowdsourcing Exercise in Higher Education

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Introduction

- The purpose of this study is to **explore the emergence of different types of crowd dynamics** in **small teams**.

- To this end, we discuss a summary of the results from a pilot study of a **crowdsourcing exercise in higher education** carried out **in the 2015 winter semester** at the **College of Management** of the École Polytechnique Fédérale de Lausanne (**EPFL**). Specifically, from November 16th to December 9th students in the **Master's course in IT and e-Business Strategy** have been involved in a crowdsourcing exercise.
- The goal of the competition was to **identify a business model for a new company**, discussing it and motivating it in a text of **3000 characters**.
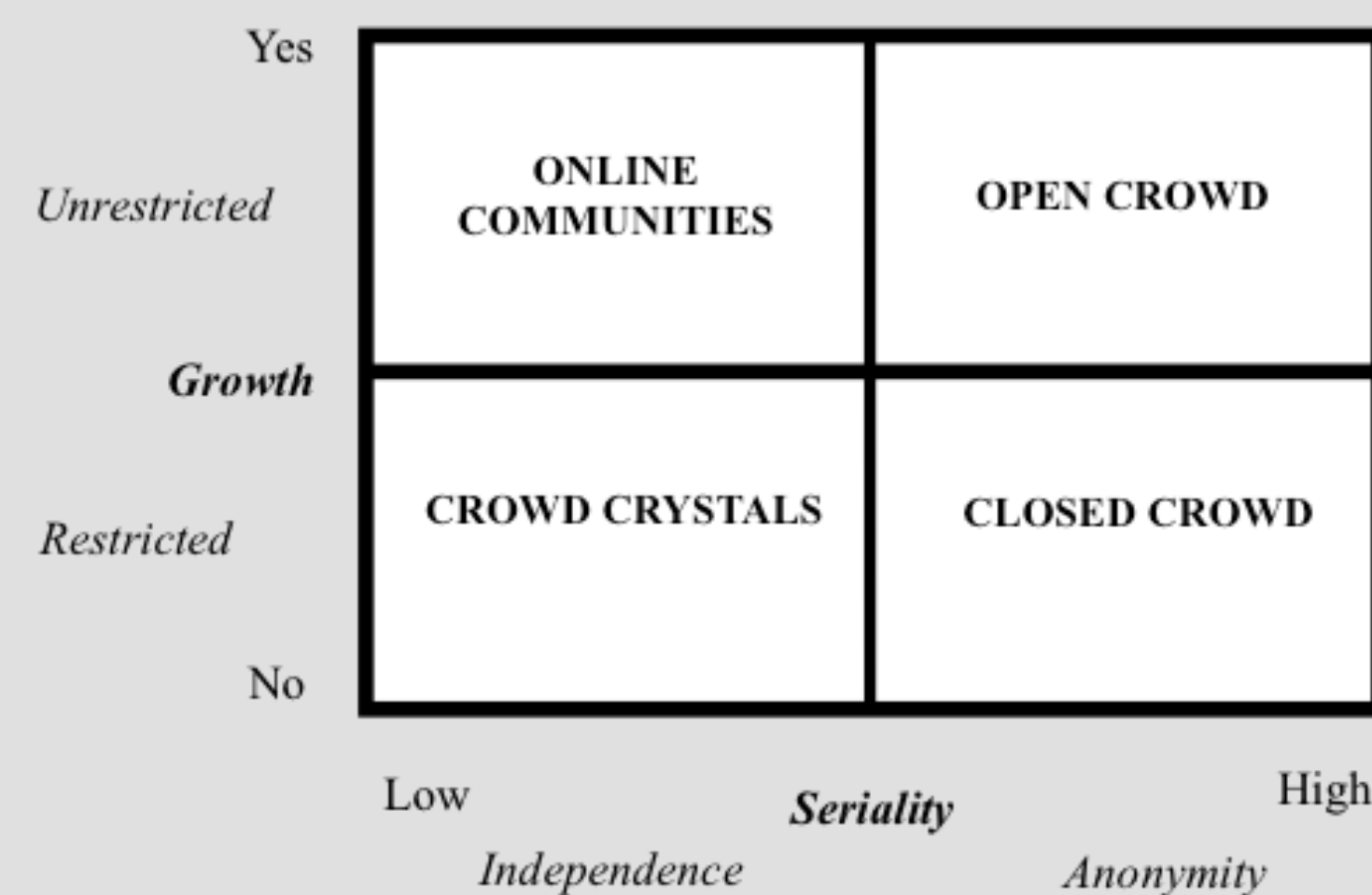

Fig. 1. Types of crowds.

Results

- Referring to the typology in Figure 1, the groups acted as a **crowd crystal** rather than a community, despite the limited number of members and their mutual acquaintance from the class.
- In addition, the analysis of the comments demonstrated **little relevance** of factors such as **identity**, **membership**, or **friendship**; whereas having the **winning proposal** emerged as a **unifying element** within the group (they were **focused on the outcome**).
- Then, there was **little evidence** of **team spirit** (they **supported the proposal** but **individually** and without reference to real team coordination). We observed the case of **groups partitioned by activity level** and pushed by the activity of two members out of five (consider G2, the winner of the challenge).
- This may imply that **a team** could be **more effective** in finding a solution when the team is **only nominally a team**, being instead actually a **crowd crystal**.

- One implication of the results may **question the performance of community-oriented investments** in team-building; also, it opens opportunities for organizations to **use prior challenges** to look for the **best contributors** and **then gather them** in another team, potentially producing effective results on similar topics as well as new "**crowd capital**" (*the total number of crowd units having a demonstrated effectiveness in idea generation or task achievement*).

Framework

In this work, we use the **typology of crowds** shown in Figure 1 and discussed in [Viscusi and Tucci 2015], which distinguishes different types of crowds according to their **growth** tendency and **degree of seriality** (**density**, **equality**, and **goal orientation** contribute to further distinguishing the distribution of agents within and between the different quadrants):

- *Community* is a well-known knowledge and innovation management topic [West and Lakhani 2008]. It is worth noting **the role of identity** and **beliefs in its cohesiveness**, rendering them difficult to conflicting and heterogeneous goals, which could give rise to crowd crystals or an open crowd.

- *Crowd crystal* is characterized by a **lack of scale**, **fewer ideas**, as well as **less input**, in addition to a **low degree of seriality** due to the **topical** rather than **goal orientation**. A crowd crystal may grow in an unrestricted fashion, losing the seriality nature of the crowd, becoming no longer anonymous, and finally reaching a "community" status. It can also evolve towards either open or closed crowd.

- *Open crowd* is characterized by "**generativity**" (ability to evolve digitally without pre-planning the design or usage [Yoo 2013]) typical of large, varied, and uncoordinated audiences [Zittrain 2006]. An open crowd requires investments to get the right **information capacity** [Viscusi and Batini 2014].

- *Closed crowd* is characterized i) by **restricted growth** and **self-established boundaries**, protected from outside influence, and ii) by its being **outsourcing**- and **narrow goal-oriented**. In the closed crowd as implemented through the fixed boundaries of digital platforms, the firm has to **modularize the problem** [Schilling 2000; Afuah and Tucci 2012]. Also, there may be potential "**dealmakers**" [Feldman and Zoller 2012] acting in multiple crowds for their own benefit, but the company will be unaware of the presence of the same parties across competitions.
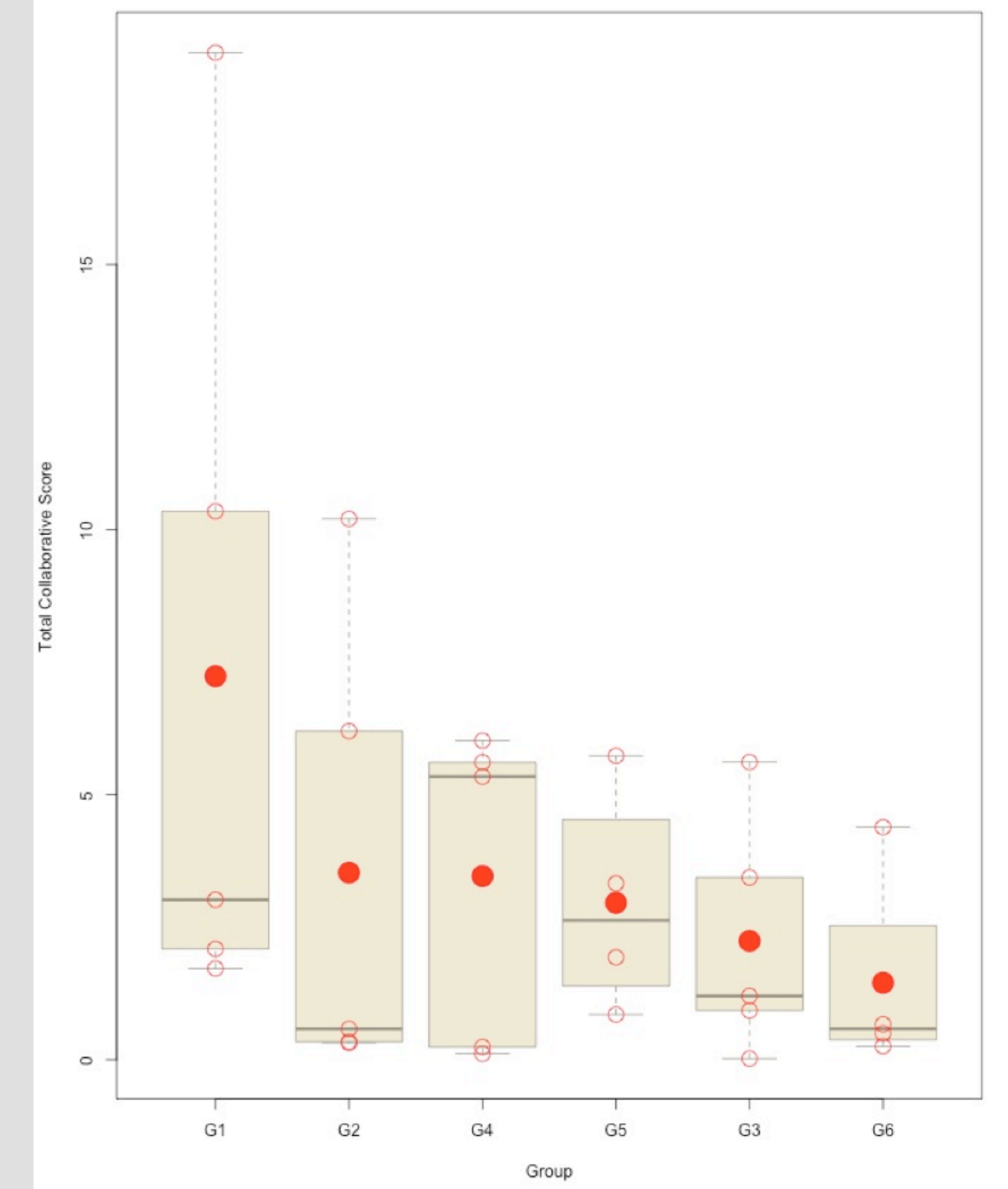

Fig. 2. Collaboration dynamics among groups during the challenge. *Solid red dots* = mean of total collaborative average score for students in a group; *red empty dots* = total collaborative average score of single students in a group; *boxes* = the edges represent the 25th (lower edge) and 75th (higher edge) percentiles of total collaborative average score for students in a group; the line in the box represents the median (50th percentile of total collaborative average score for students in a group); *whiskers* = the minimum (lower whisker) and maximum (higher whisker) total collaborative average score for students in the group.

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