

# Systems Theory In People Analytics - Or: The Joys Of Open World Gaming

Author: Peter Romero and Andreas Kyprianou . February 2022

## Introduction

The Uncharted series of games is incredible. Great story, well-written characters, intense action scenes, and powerful emotional payoffs. The Zelda series of games is also incredible – powerful stories, a brilliant set of characters, amazing action scenes, and strong emotional connections. What is the main difference between these games? Uncharted is a linear story experience- sort of like reading a book. There is a specific order of events and encounters, with a beginning, a middle, and an end and you have little freedom around how you experience the story. Zelda is the exact opposite. It is an open-world game, meaning that you have full freedom around your actions and the story develops as dictated by your actions or explorations. Both offer a very different type of experience, with some gamers swearing by open-world games while others love experiencing a more structured approach to their gaming.

What does this have to do with Systems? In the [first article of our Systems series](#), we presented Systems Thinking tools. That was more aligned with the uncharted experience above - we set the scene, introduced some clear examples, and gave you various tools to work with, implying that if you apply these to your People Analytics projects, there will be a neat resolution at the end. Though this provides you with a solid foundation, you will not be surprised to hear that there's much more to Systems than this – after all, we finished the article by advising you to 'trust in the chaos'.

Systems Theory is the overarching theory that encompasses Systems Thinking, a precise framework, by which you can investigate any group of objects that work together. It gives you a clear understanding of where to direct your exploration and experimentation in People Analytics practice, as you will see later. In this sense, understanding Systems Theory is much more akin to being dropped into the Zelda massive game world with a small sword and left to fend for yourself without many guidelines. Though Systems Theory takes a lifetime to master, you can achieve great results with just a handful of its core tools. Therefore, it is important for us to introduce a few more concepts of it to our fellow People Analytics and HR professionals and scholars – so that next time you fire up that Zelda game, you start your exploration with the Savage Lynel sword instead (the most powerful one-handed weapon in the game for those non-Zelda converts among you).

## Systems Theory overview

Let us start with a true story from one of the authors' experiences that we will be using throughout the article to illustrate some of the concepts of Systems Theory. Imagine that you are working in a People Analytics team of a mid-sized technology company and you have been made aware that in the last twelve months, quite a few engineers in the R&D department have departed one after another. This is a matter of urgency for all senior stakeholders, so you begin following the usual steps and gathering as much data as possible. You interview local stakeholders, assemble all kinds of data from the HRIS, the ATS, and the LMS, and start creating predictive models. Some of those even yield some excellent early warning signs – for example, most engineers that left were taking more coding courses from the internal LMS than those that stayed, especially in the last months before they departed. Frustratingly though, all predictive models display early warning signs, instead of informing you about the true root causes of engineer attrition. Having read our article on Systems Thinking, you know that the 'Why' is the most important question of all, wherefore you understand the urgency of this matter.

Even though this is quite a basic example, learning from it illustrates the first tenet of Systems Theory very well. The involved People Analytics team focused mostly on data from individual employees and to a degree the team/company internal environment, without considering the broader system that this situation takes place in. If the team had used some Systems Theory principles, they would have had better luck finding the root cause of the problem. So, what is Systems Theory, and can it be applied for People Analytics operations?

As the name implies, Systems Theory is an interdisciplinary theory of systems, which originates from biology. At its core, it defines systems by their borders and internal as well as external specialization (Willke, 2000). Everything can be a system by that definition: a cell, a creepy colony of bacteria, animals, humans, teams of Zelda developers, societies, planetary systems, galaxies, and of course your humble workforce, which you intend to analyze.

## Open and Closed Systems

One of the most important distinctions that Systems Theory makes is between closed and open systems:

- Closed systems are fixed entities that operate in complete independence of their surroundings.

For example, the motherboard of the PC that we have written this article on is a closed system – it operates the same whether we are in the office or at home or on a beach on a Greek island.

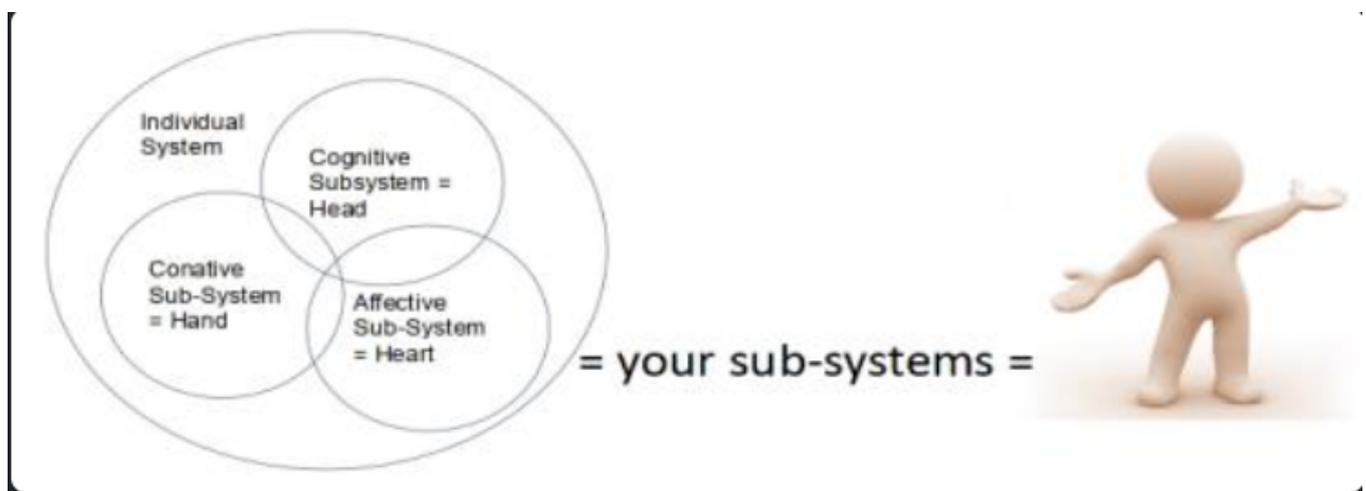
- Open systems on the other hand depend on and thrive only when they engage with their environments. Large organizations and companies like the one in our example are considered open systems with **two key characteristics**:

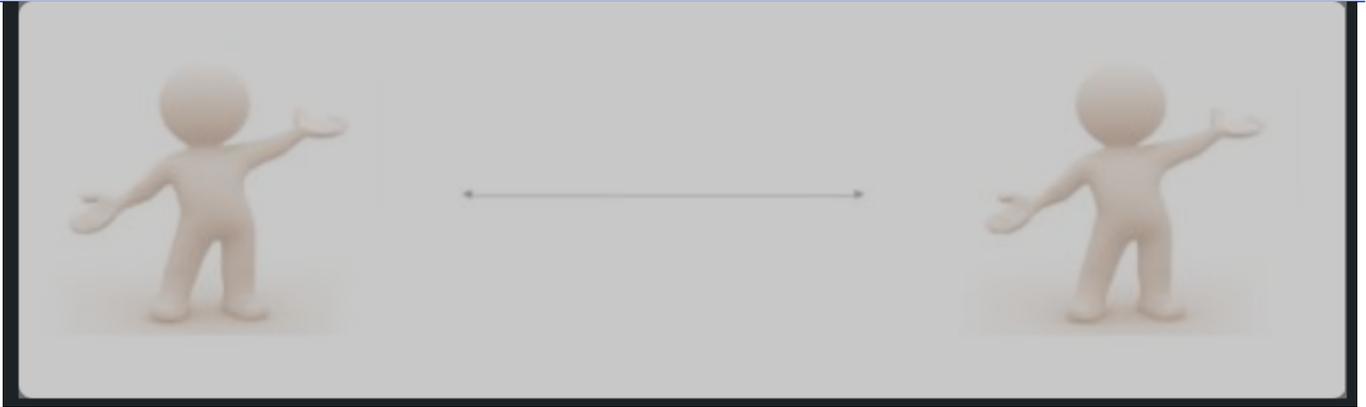
1. All organizations and organizational actors are embedded in a broader, onion-layered, system where all their actions are shaped by the context in which they find themselves.
2. The interdependence between any elements in the system means that any change in one area of the organization will necessarily cause a change in other areas.

## System Levels

We will revisit both characteristics in our recommendations below. For now, let's examine the basic building blocks of organizational open systems. They look something like the following:

1. We start with the **individual system** – each one of us is made up of multiple interdependent sub-systems, for example, the cognitive (head), affective (heart), conative (hand) trio. Two individuals that meet somewhere at a neutral place represent a **dyadic system**. When they interact, they interact with their subsystems, and the mismatch between the dominant system can be the source of trouble; for example, one person may be focused on cognition, whereas the other may be focused on effect.

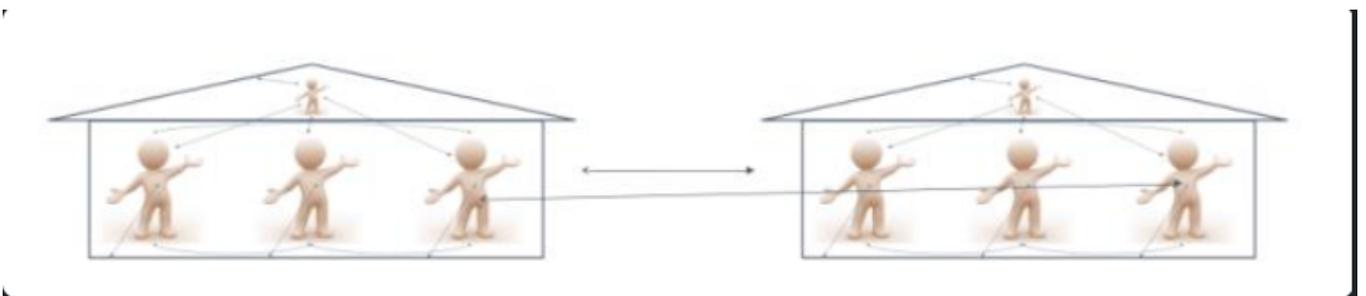




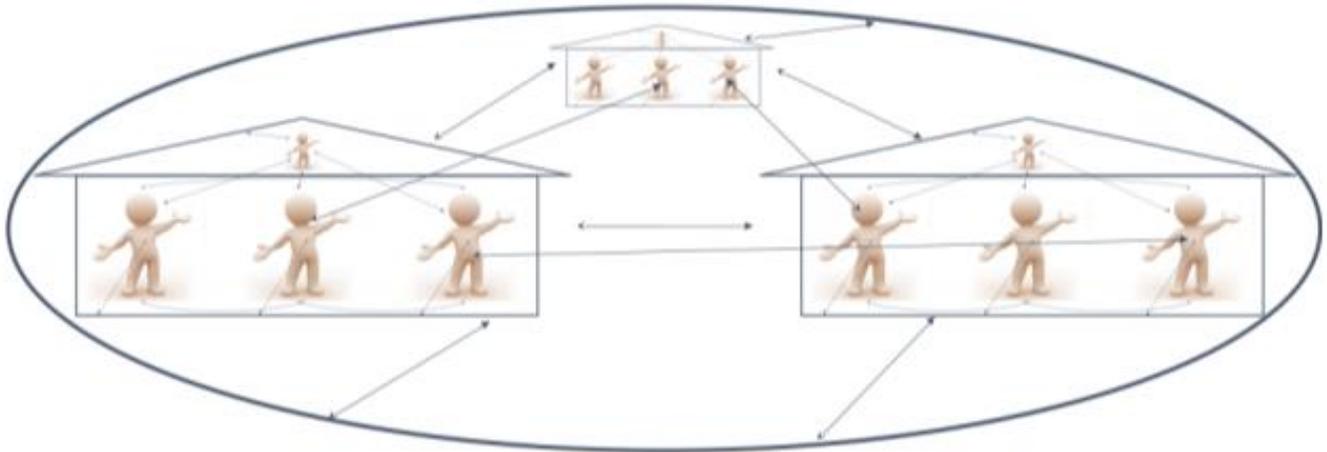
2. The moment a third person comes into play, a **microsystem** comes into being, in which each party is connected to all other parties.



3. Once a bigger, relevant context is connected to that microsystem, which goes over and beyond the original microsystem, a **mesosystem** is created. For example, if three individuals meet and start a company. As the original mesosystem grows and expands, more microsystems will be created within it. At this point, the mesosystem shapes the microsystem, as the microsystem shapes the mesosystem, and both systems shape the individual system, as the individual system shapes them, as well. The place shapes the people, as the people shape the place (Schneider, 1987).



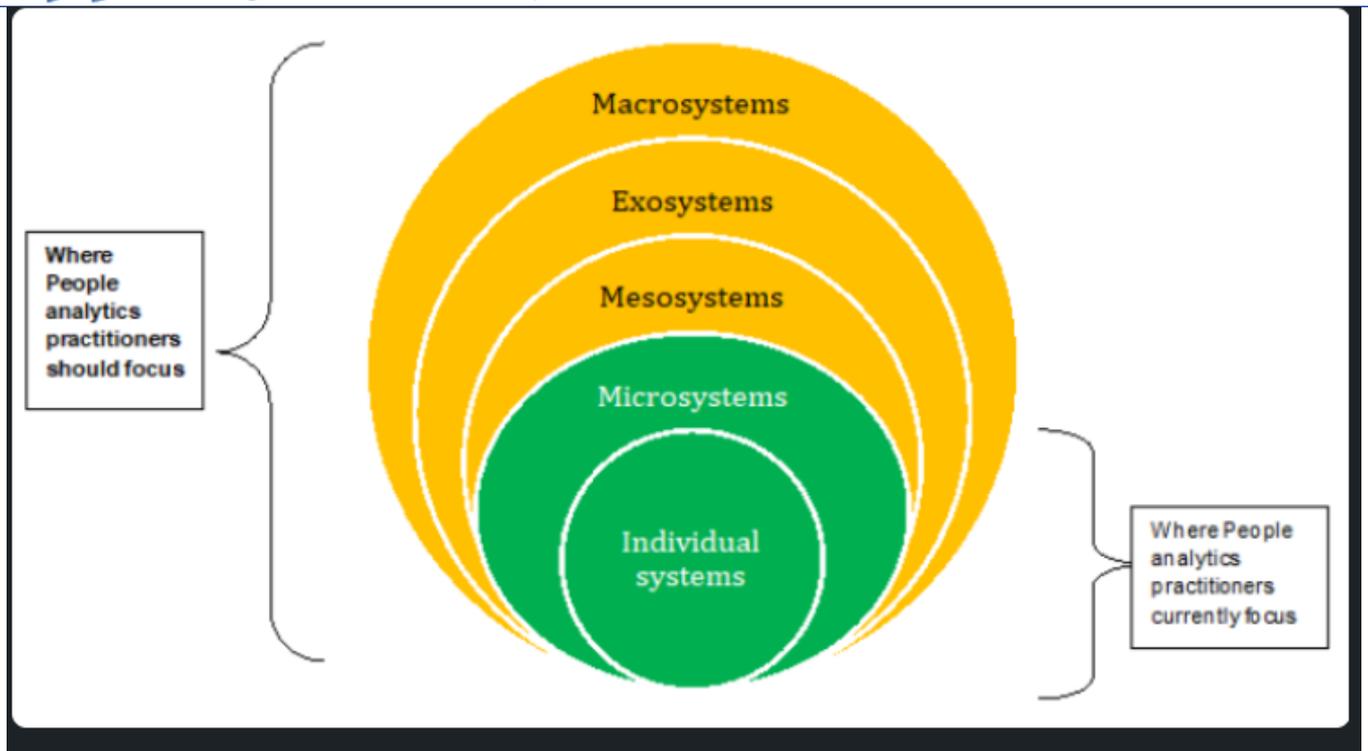
4. This concept can be spun further by putting two mesosystems together, which form an **exosystem**, for example, an industry, and in the case of an industry association or cartel, may even create a new hierarchy therein. Many industries and other systems form societies, and many societies form super-structures like the European Union, et cetera. This broader systemic level is called a **macrosystem**.



The implications of the above for People Analytics and HR professionals are clear – as demonstrated in the visual below. More often than not, we focus just on individual systems (e.g., individual records in HRIS or ATS) or microsystems (e.g., teams), while ignoring the relevant higher systems. Particularly some of the exosystemic and macro systemic factors that need to be evaluated include for example:

- political influences
- collective bargaining agreements and labor regulations
- competitor influences
- cultural norms and regulations
- environmental factors

At the same time, the focus on individual and specific microsystems means that we do not pay enough attention to the inter-relationships between these systems and their interaction – we will discuss this further in the next section on emergence as well as in our practical tips.



## Systems Theory overview – Emergence, Self-Organisation, and Equifinality

Building on the General Systems Theory introduced in the previous section, there are three more key concepts that are useful when understanding individual and organizational behaviors.

**Emergence** refers to the existence of behaviors in complex systems that may not be present in their individual parts – in other words, what the different parts of the system do together, that they do not do alone. The proverbial whole is more than the sum of its parts. The notion of emergence has a long history with roots in biology, philosophy, and sociology. Examples of this are everywhere in the world from biology – e.g., birds flocking together, to societies – e.g., individuals organizing into neighborhoods in cities without any form of central leadership, to organizations – e.g., certain teams assuming an inordinate amount of power in the workplace when they come together. The key to understanding these behaviors is understanding both the individual and the group factors. Using a layman’s analogy, emergence is seeing **both** the forest and the trees, instead of focusing on one or the other. Understanding emergence can be key to understanding entire organizations and the issues they face. Consider for example the cult of the leader-founders and other influential leaders can create structures and policies in organizations that last for a long time and influence emergent behaviors in the workplace, which would not be observed at an individual level. Keeping the concept of emergence in mind whenever faced with an organizational issue is key to understanding all aspects of the issue.

**Self-organization** is a topic in a similar vein; actually, emergence and self-organization are frequently bundled together as sciences of complexity. Reducing it to a core definition refers to the way, systems are able to acquire and maintain their own structures, without external control. Note that this does not clash with our discussion on exosystems – these still **influence** internal systems. However, it explicitly talks about the lack of need for explicit **control**. Most systems seem to have an inherent capacity to find order, instead of relying on any planning or enforced order from the outside. This is particularly important when it comes to the way an organization chooses to structure itself, and of course, HR policies and regulations are a major part of that. Research into organizations has shown the importance of this. For example, Ashmos et al. (2000) studied the medical sector and demonstrated how organizations that adopted structures consistent with self-organization, like increasing connectivity among employees, maximizing the flow of information, and decentralizing structures, outperformed those organizations that aimed to impose more control, like centralized decision making and codifying of policies. Once again, understanding the concept of self-organization is key for HR and People Analytics professionals, particularly when considering problems that arise from overly rigid structures that do not allow easy communication and flow of information between subsystems at the micro and macro level.

The final concept that we'd like to introduce, is that of **equifinality**. The official definition of this by Katz and Kahn (1966), states that organizations may obtain the same end state from differing initial conditions and through different means. Putting this in layman's terms again, this implies that there is no 'one size fits all' approach for achieving a goal. This is a surprisingly underexplored concept in HR practices, given that there is a constant race in the profession to adhere to best practices and follow the latest management fads, without the appreciation that there may be multiple 'correct' roads that lead to the desired result. Once again, all parts of the system must be considered to understand what works in your organization, given how the subsystems interact.

For example, take performance management (PM) as a key HR system, to achieve improved employee performance. PM itself is made up of multiple subsystems; each with a variety of decisions to make, for example about setting goals, observing performance, evaluating performance, feedback, performance reviews and meetings, and so on. Each goal can vary on the formal versus informal scale and is highly dependent on multiple other factors such as rater and rate demographic factors, individual differences, training and accountability, ownership, organizational structure and culture, and business strategy. Unless all these are well understood in the context of your organization, just following the latest 'best practice' fads like abolishing performance ratings and reviews altogether, is at best short-sighted without considering the full context, and at worst achieves the opposite goal of PM.

There are multiple other concepts we will not describe at this time, but for those of you with an interest in Systems Theory, there are some other extremely valuable ones including homeostasis, autopoiesis, internal communications, and steering, as well as internal exchange and currencies. For now, we will attempt to provide some practical tips off the back of our theoretical background.

## Practical tips

### 1. Use your full strategic arsenal of tools.

Returning to our example at the beginning of this section, what are some of the additional actions we should be taking to explore the attrition reasons. Let's remember the first characteristic of open systems: **All organizations and organizational actors are embedded in a broader system.** Based on that, we should be exploring the exosystem and macrosystem our firm operates in, to establish whether there are any external reasons responsible for the attrition. Here, we can borrow some key tools that our colleagues in strategy and marketing have been using for a long time now, including the classic PEST(EL) and SWOT analysis. Our recommendation is that PEST(EL) analyses are done regularly so that you are always ready to identify or even proactively expect trends that influence workforce matters. Cultivate relationships with the departments that are responsible for your company's PEST(EL) analyses and contribute your findings from the workforce perspective, to make sure you're always up to date. That is something that Talent Acquisition frequently does from a competitive landscape perspective, so you may want to learn from them how they do it in your organization.

In the example above, the People Analytics team's external research revealed a few key factors that had nothing to do with internal factors. There was a combination of systemic factors including:

- Governmental legislation makes a particular industry very attractive for companies
- Employers in this industry opening office in tax-friendly locations
- The company's employees are very desirable because of specific capabilities developed inhouse

The combination of these factors meant that there was little the company could do to combat attrition, by the time the poaching began. This was a clear example of individual systems influencing and being influenced by exosystems and macrosystems. With some foresight through a better understanding of systems theory, the People Analytics team could have been readier to enact retention strategies sooner.

It is very important to emphasize that PEST(EL) analyses are as important for smaller organizations as they are for large ones. For example, smaller organizations cannot usually compete with the large

corporates on compensation or brand reputation, so having a rounded understanding of both their ecosystems and mesosystems will allow them to deploy alternative talent attraction and retention strategies.

## 2. Get on the ONA bandwagon

If PEST(EL) is one of the main tools you can use to explore the ecosystems and macrosystems that influence your organization, then Organisational Network Analysis (ONA) is the key exploration tool for the mesosystems and the microsystems. The second characteristic of open systems as we mentioned above: **The interdependence between any elements in the system means that any change in one area of the organization will necessarily cause a change in other areas.** In addition, remember the principle of emergence which we introduced in the previous section, where the combination of individual systems often produces surprising results.

Far too often, People Analytics teams focus on the individual system, or a stand-alone microsystem, ignoring how these interrelate. ONA has been around for a few years but is still severely underused or misunderstood. The pandemic has accelerated the adoption of some ONA tools, with large vendors like Google and Microsoft jumping on board with their Workplace (Microsoft) and Workspace (Google) Analytics set of tools, going in open competition to established People Analytics ONA providers like Humanyze. At its core, ONA is the study of the relationships between the multiple individual systems and microsystems within a mesosystem. It can be applied to a variety of scenarios, from looking at the flow of information, collaboration patterns, identifying connections, and exploring, how well each system operates.

In our example, applying ONA to the R&D team, revealed another interesting, though unrelated to the main attrition problem trend. The People Analytics team found that onboarding new employees virtually led to smaller internal networks than those of employees who had the onsite onboarding experience, which, in turn, lowered engagement of those new employees. This led to a full redesign of the onboarding experience to ensure that important networks are built early.

## 3. HR processes as systems

The prior two recommendations focus on the analysis of individual systems and ecosystems. Do not forget though, that everything is a system, including the entire employee journey (often incorrectly called the ‘end to end lifecycle’) and all the processes embedded in it. We have already talked about the example of performance when discussing equifinality above. The same goes for our employee attrition

example. In the vast majority of cases, attrition takes place on the individual system level; however, it interacts with several levels of microsystems and mesosystems like engagement, performance, onboarding, and learning. These, in turn, are embedded in much harder to define mesosystemic elements like organizational culture and values.

As discussed in our last article on Systems Thinking, underlying mental models form the behaviors, perceptions, and norms of organizations, and in their aggregate, can be called culture. While we recommended in that article to drill down to individual behaviors for the sake of better measurement, our advice in this article is to always treat your problems holistically. If attrition is the result, do not overlook key drivers of the employee lifecycle, including recruitment, onboarding, goal setting and performance, and wellbeing. However, break them down, of course, for properly measuring them. For the geeks among you – one of the main reasons we expect at best AUC between .65 and .85 in predictive models is that different systemic levels have varying degrees of influence, and we mostly lack exact measures to quantify those.

#### **4. Remember self-organization and equifinality**

Finally, as per the equifinality principle: stop listening to LinkedIn expert articles! All joking aside though, the constant chase of the latest fad and best practices in the field is usually misguided. There are so many variables to consider for each organisation, that simply following someone else's example will usually end in pain. On the one hand, that might be quite scary and seemingly chaotic. On the other hand, though, it opens up a world of opportunity for every HR team to innovate and for the People Analytics teams to provide a rounder picture backed by data to build the right processes for their organization.

And once you begin building those processes, always keep the self-organization principle in mind – most systems will find a way to organise efficiently as long as you provide the right channels for the individuals and subsystems to communicate efficiently and understand whether your networks are working efficiently, which stresses our recommendation from the last article, to trust the chaos.

## **Conclusion**

The beauty of open-world gaming is that no one individual has the same experience while playing it. If there's one argument you take from our article, is that there is no single best practice people analytics or organizational principles either. So many systemic elements go into choosing an approach, from the size of the organization to the maturity of the leadership team to the technical skills of your teams and

employees to your available budget. Hence, we encourage you to strive to be an internal innovation hub- push the boundaries, try things out and do not follow the crowd.

In essence, embrace the incredible complexity of organisations as per Systems Theory and then keep everything you do as simple as possible. Easy, right? Almost as easy as finally completing a Zelda game after 100+ hours of gameplay.

*The post "Systems Theory In People Analytics – Or: The Joys Of Open World Gaming" was written by [Peter Romero](#) and [Andreas Kyprianou](#) . It was first published by Peter Romero here <https://www.linkedin.com/pulse/systems-theory-people-analytics-joys-open-world-gaming-peter-romero/>*

<https://thehumancapitalhub.com/articles/systems-theory-in-people-analytics-or-the-joys-of-open-world-gaming>