

## **Digitally connecting data collections related to the Covid-19 pandemic to preserve their content and realize reproducible analysis of it through open science for the common good**

Based on the principles of open science, open data, and reproducible research, the Covid-19 Museum connects digital collections housing information related to SARS-CoV-2 through software installable on any resource for archiving or calculation. The museum's distributed architecture ensures the protection of the information stored within the various resources and the additional knowledge gleaned from it. As an electronic instrument designed to further memory, pedagogy, and research, the museum will be available to everyone.

### **A pandemic in the digital era**

- That the novel coronavirus that emerged in 2019 produced the first pandemic of the digital era offers the unique opportunity to trace, understand, and compare the evolution of a disease and the corresponding societal responses—whether personal, political, medical, or scientific—in every country. The Covid-19 Museum is itself one such response, aimed at providing humanity with an analytical tool commensurate to the event.

The Covid-19 pandemic has brought the world to a potential breaking point. By linking the multitude of issues the novel coronavirus has exposed and created, the Covid-19 Museum, through the research it encourages, can serve as a tool for reflection and societal self-reflexivity.

## **Uniting the digital collections of Covid-19 artifacts**

### **How it works**

The Covid-19 Museum does not itself house a collection on the pandemic, but rather unites far-flung collections by providing access to them. Each entity or individual that makes its digital information on Covid-19 publicly available for consultation and analysis within the framework of the museum automatically becomes a member. The integration of these collections is made possible through the installation of software developed by the Covid-19 Museum Foundation ([CaMPA]), the museum's parent organization.

### **Construction of the museum**

The construction of the Covid-19 Museum revolves around the manufacture of a piece, or "brick," of open source code that provides the interfacing software for the collections made available by museum members and for the computing resources provided by institutional members and by members of the general public who agree to make their computers available when the machines are "sleeping."

The deployment of the code to entities and individuals with archiving or computing capacity serves as a foundation for the museum's construction, and the interface established by this installation acts as the guard and gateway to the museum.

## **Role of the interface**

- The Covid-19 Museum's interface allows the public to consult the digital artifacts on the Covid-19 pandemic in the collection of members in accordance with the members' own museography and keywords. It also offers the possibility of accessing all the available data through museum keywords.
- The interface establishes that through this gateway the Covid-19 Museum is operated by the actor who deploys the piece of code and thereby offers its resources in an act of solidarity.

## **A museum open to researches and the general public**

The Covid-19 Museum is a tool available to and for everyone. Anybody can consult it, but beyond that, everyone can appropriate the tools of data science, including artificial intelligence.

Moreover, what distinguishes the Covid-19 Museum from other initiatives is the possibility for researchers to file a request for access to all or part of members' databases to extract knowledge through the means of data science combined with those of digital science. The museum does not analyze the collections it connects. Rather, for the common good, it provides researchers the capability to do so in a reproducible manner while also protecting the knowledge extracted from it.

Peer review remains a separate process, conducted outside the museum.

## **Why a "museum"**

The word *museum* is a Latin derivation stemming from the Greek *mouseion*. Translated as "seat of the Muses," it was a place for contemplation and philosophical thinking, like the Alexandrian Museum, the institution built in Egypt around 280 BCE by Ptolemy I Soter that resembles today's universities. Ptolemy's creation stood as an intellectual sanctuary, a center of research with a renowned library. Many centuries later, Europeans adopted *museum* to express the concept of comprehensiveness, not a physical structure. The Covid-19 Museum seeks, in effect, to create an electronic version of the Alexandrian Museum that focuses on the pandemic that is today reshaping the world.