

**infarm**

# HOW SOFTWARE CAN FEED THE WORLD

@CHRISTIANBARRA // EUROPYTHON 2019





inform



# Why Software Is Eating the World

by Marc Andreessen

how innovation happens ·  
nature of the firm & evolving institutions ·  
articles



***This article was originally published in The Wall Street Journal on August 20, 2011.***

This week, Hewlett-Packard (where I am on the board) announced that it is exploring jettisoning its struggling PC business in favor of investing more heavily in software, where it sees better potential for growth. Meanwhile, Google plans to buy up the cellphone handset maker Motorola Mobility. Both moves surprised the tech world. But both moves are also in line with a trend I've observed, one that makes me optimistic about the future growth of the American and world economies, despite the recent turmoil in the stock market.

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In short, software is eating the world.

# CAN SOFTWARE FEED THE WORLD?

# WHY SHOULD WE BOTHER?

## News



### World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100

21 June 2017, New York

#### SUBSCRIBE TO OUR MONTHLY NEWSLETTER – UN DESA VOICE

Name

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#### NEWS BY YEAR

- 2019 (48)
- 2018 (165)
- 2017 (177)
- 2016 (155)
- 2015 (173)
- 2014 (136)
- 2013 (133)
- 2012 (138)
- 2011 (140)
- 2010 (68)

#### NEWS BY KEY ISSUE

- Intergovernmental Coordination
- Sustainable Development
- Population

## News



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## News



### 68% of the world population projected to live in urban areas by 2050, says UN

16 May 2018, New York

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# PROBLEMS

-  WE NEED TO AVOID HUNGER
-  WE NEED TO MAKE CITIES  
MORE SUSTAINABLE
-  WE CAN'T INCREASE  
CROPLANDS
-  WE CAN'T TERRAFORM THE  
SEA

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# SOLUTIONS



CHANGE OUR DIET 



REDUCE WASTE 



USE TECHNOLOGY 

# SOLUTIONS



CHANGE OUR DIET 🌱



REDUCE WASTE 🗑️



USE TECHNOLOGY 🤖

GROW WHERE YOU ARE

inform

inform  
ORIGINAL  
TASTE

FROM BERLIN  
100% PURE



BRAEBURN 3,49  
JONAGOLD 2,79

AUTENO 2,79  
NATYRA 2,79

PINK LADY 2,99  
BRAEBURN 2,99

BOSKOOP 2,99  
GRANNY SMITH 2,99

Royal Gala/Tony 2,99  
SHAMPION 2,99

ROYAL GALA/TONY 2,99  
SHAMPION 2,99

TAFELTRAUBEN  
BEST KERNLOSE KLASSE I  
Bio-Pflanzung  
2,49

BIO TAFELTRAUBEN  
HELL KERNLOS  
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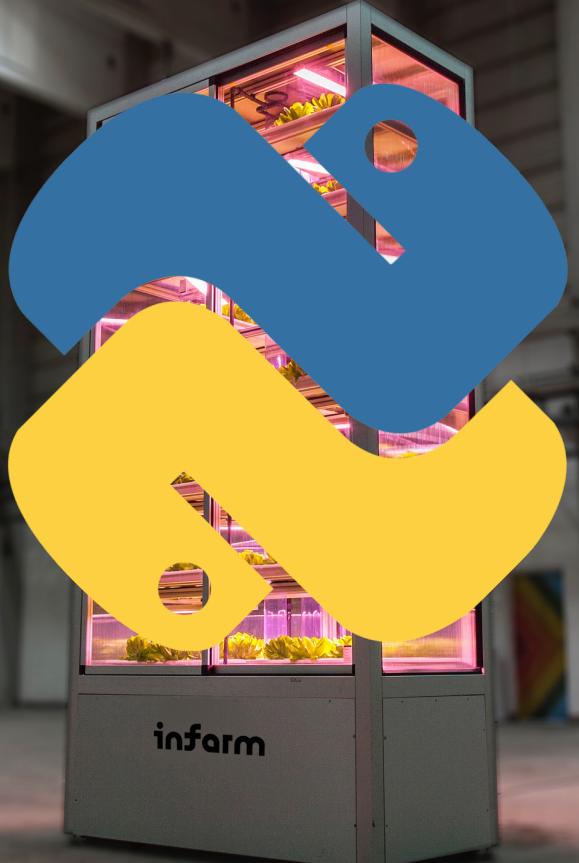
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# PILLARS



**OPERATIONS**



**FARM CONTROL**



**MONITORING & ALERTING**



**PLANTS QUALITY**

# PILLARS



**OPERATIONS**



**FARM CONTROL**



**MONITORING & ALERTING**



**PLANTS QUALITY**

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**OPERATIONS**



**FARM CONTROL**



**MONITORING & ALERTING**



**PLANTS QUALITY**

PAST

# SOFTWARE



**SMALL TEAM**



**1 BIG FLASK APP**



**OPERATIONS & FARM CONTROL  
& MONITORING & ALERTING**



**CELERY FOR BACKGROUND  
JOBS**

PAST

# SOFTWARE



**SMALL TEAM**



**1 BIG FLASK APP**



**OPERATIONS & FARM CONTROL  
& MONITORING & ALERTING**



**CELERY FOR BACKGROUND  
JOBS**

# SOFTWARE



**SCALABILITY ISSUES**



**TOO MANY UNMAINTAINED  
DEPENDENCIES**



**LEAKY ABSTRACTIONS**



**ORM-ALIZED**

# SOFTWARE



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**LEAKY ABSTRACTIONS**



**ORM-ALIZED**

# SOFTWARE



NO CONTAINERS



FIGHTING WITH HEROKU



LACK OF USABLE  
LOGS/METRICS



4 DIFFERENT CLOUD  
PROVIDERS

# SOFTWARE



NO CONTAINERS



FIGHTING WITH HEROKU



LACK OF USABLE  
LOGS/METRICS



4 DIFFERENT CLOUD  
PROVIDERS

EVOLUTION

# SOFTWARE



CONSOLIDATE



ARCHITECTURE



CLOUD NATIVE



OBSERVABILITY

# CONSOLIDATE



DEPRECATE ALL THE CLOUD PROVIDERS AND  
MOVE TO GCP



PAY TECHNICAL DEBTS



WE ❤️ LINTERS: FLAKE8, ISORT, BLACK AND  
MYPY



BUILD VS BUY &  
VS UNMANAGED VS MANAGED

# CONSOLIDATE



DEPRECATE ALL THE CLOUD PROVIDERS AND  
MOVE TO GCP



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# ARCHITECTURE



MOVE TO A SERVICE ORIENTED  
ARCHITECTURE



MORE STRICT SERVICE SEPARATION



MOVE DATA INGESTION TO CLOUD  
FUNCTIONS

# ARCHITECTURE



MOVE TO A SERVICE ORIENTED ARCHITECTURE



MORE STRICT SERVICE SEPARATION



MOVE DATA INGESTION TO CLOUD FUNCTIONS

Developer Advocate, Python

## **Stewart Reichling**

Cloud Functions Product  
Manager

April 30, 2019

write a few lines of code, deploy and... voilà! You've got a serverless, auto-scaling, pay-per-use function running on Google Cloud.

A big part of that simplicity comes from being able to write Cloud Functions in your favorite programming language. That's why we're excited about our recent [language support announcements](#) at Google Cloud Next '19:

- Python 3.7, Go 1.11 and Node.js 8 runtimes are now generally available.
- Node.js 10 runtime is now in public beta.
- Go 1.12 and Java 8 runtimes are in private alpha (sign up to test [Go 1.12](#) and [Java 8](#)).

## Try GCP

Get \$300 free credit to spend over 12 months.

FREE TRIAL

Let's take a closer look at one of the generally available runtimes:

### **Serverless + Python on Cloud Functions**

Over the past six months, we've spoken to many established and up-and-coming customers who have used these runtimes to build on Cloud Functions. One customer, [infarm](#), uses Cloud Functions and Python 3 to support its distributed network of efficient vertical farms:

# CLOUD NATIVE



MIGRATE TO CONTAINERS (ALSO INSIDE HEROKU)



INTRODUCE INFRASTRUCTURE AS CODE



EACH BUILD IS A DOCKER IMAGE



INTRODUCE K8S

# OBSERVABILITY



ADOPTING STRUCTLOG



START HAVING METRICS



STACKDRIVER

# OBSERVABILITY



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FUTURE

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MOARRRR MICROSERVICES



COMPLETE MIGRATION TO K8S



MORE FOCUS ON DATA



inform

FUTURE

# SOFTWARE



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MORE FOCUS ON DATA



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AUTOMATED FARM



EDGE COMPUTING WITH AI



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FUTURE

# SOFTWARE



AUTOMATED FARM



EDGE COMPUTING WITH AI



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FUTURE

# SOFTWARE



AUTOMATED FARM



EDGE COMPUTING WITH AI



infarm

THAT'S ALL

**THANKS**

**QUESTIONS?  
WE ARE HIRING!!!**

