

The meaning of (digital) life

“Digital. Now, what exactly is that?”

I deal with this question more times than I care to admit. Whether explaining to my mom what I do every day or conversing with clients about their portal and collaboration challenges, the word “digital” seems to be sprouting up more and more in all of our daily dialogs. But the word “digital” itself is hard to define; it’s like a familiar face you recognize at a party but can’t quite place.

So, why is it so hard to define digital? After all, it’s 2015: the year of hover boards and flying DeLoreans!

I believe it’s because our concept of digital has evolved over the years. We used to characterize digital as the translation of data into binary ones and zeros so that it could be stored, processed and transmitted for use by people and various technologies. Compact discs are considered digital while primitive records relied on bumps, grooves and needles to make music. Today, with the advent of digital downloadable music, CDs are just as primitive as records once were.



When I was a kid, I remember upgrading my mechanical Mickey Mouse watch to a cutting edge Casio “digital” calculator watch. Is that digital?

I also had a “digital” alarm clock that I set daily so I wouldn’t be late for early bird band practice. So, is that digital?

Even today, I passed an airport ad asking the passers-by “are you ready to go digital?” Frankly, I’m not sure… Tell me what it is first and I’ll tell you if I’m ready to go there.



This question of “what is digital?” has kept me up at night. How do we explain it? How do we define it?

The standard answers are typically long, drawn-out sermons describing emotions, experiences, use cases and technologies that somehow fall into a romantic brave new world of digital. The usual answers include things like cloud, mobile, social, analytics and the internet of things (or internet of everything). But is that really it? To me, those are examples of digital technology but do not define concept of digital itself. It’s like trying to define “Italian food” by listing restaurants; those are just examples and not a definition of the thing itself.

What we need is…

…a real definition.

…an objective set of criteria to tell us what is digital and what is not.

…clear characteristics that describe, without debate, the fundamental aspects of digital.

It wasn't too long ago that "cloud" was the hot buzz-word. We slung the word "cloud" around without any regard for its meaning, definition or criteria. We started putting familiar technology concepts through the cloud test:

- email…is that the cloud?
- file sharing…is that the cloud?
- ERP systems…are those the cloud?
- mainframe…is THAT the cloud?

The best answer we could come up with for many years was: "well, that depends…"

That is, until September 2011 when NIST took a bold step forward and cut through the jargon, confusion and misconceptions with its publication of Special Publication (SP 800-145): "The NIST Definition of Cloud Computing." NIST set forth five essential characteristics of cloud computing that systems must meet if they are to be considered "cloud." They are:

1. 

On demand self-service – users must be able to self-initiate the provisioning of resources such as spinning up a server or allocating storage amounts.

2. **Broad network access** – users must be able to access the resources over a network such as the

internet or internal intranet.

3. **Resource pooling** – Resources such as processing power, storage, memory and bandwidth are pooled for the collective use by many people.
4. **Rapid elasticity** – The resources should be able to scale up or down as needed.
5. **Measured service** – The resources should be metered so that they are pay-per-use.

…and the definition has held true to this date. The criteria defined by NIST applies to all cloud service models (SaaS, PaaS and IaaS) and cloud deployment models (Public, Private, Hybrid and Community); it's beauty is its universality and its simplicity. At the time of release, this definition was groundbreaking. It helped us in the industry design and build newer, better, faster and less costly systems based on achieving these essential characteristics.

I looked around the NIST publication library for an equivalent document describing "NIST Definition of Digital," but alas, it did not exist! Undeterred, I set out to create my own definition that could characterize digital technologies such as cloud, mobile, social, analytics and IoT.

Here's what I can up with…

To be considered digital, a system or technology must be:

1. Computerized

It almost goes without saying, but digital systems and technologies are electronic (not manual or paper-based) and must leverage some kind of processing power (whether mobile, wearable, or laptop).

2. Connected

It must have connectivity to both its users and other systems. Many legacy systems are siloed and do not interface or integrate with other systems. Standalone islands of data or "air-gapped" technology resources

are of little use in a digital world. The power of digital systems is their integration with one another in useable formats. APIs, interfaces and SDKs (software development kits) allow us to interact with systems and technologies in new ways and enable us to connect one system to another with relative ease.

3. Data-Driven

Digital technologies and systems are both data consumers and data producers. Everything digital revolves around capturing data, turning it into insight, and sending it off for consumption. Data is the fuel on which digital systems and technologies are powered.

4. Automated

It must automate something (a process, a task, a routine, an approval, etc.) without requiring manual intervention. The system or technology should use software, code or workflow to execute processes more efficiently than could be done manually. After all, just because we have “digits” on our hands does not mean it becomes digital if we do it by hand! (ok, that was a really bad pun)

5. Scalable

The system or technology should be able to easily grow and expand as needed. Similar to the concept of cloud elasticity, provisioning more resources as needed should be inherent to all digital systems and technologies.

6. Accessible

The system or technology should be available anywhere, on-demand and on the users’ terms. Whether mobile, watch, wearable, web, or desktop the functionality must not be held hostage in a desktop database; it should be interoperable on a multitude of platforms and remotely reachable via many form-factors.

One additional criteria I will add as an important overarching principle – but not necessarily an essential definition of digital – is the system or technology must be purposeful. It must fill a genuine need, it must solve a problem, fill a gap or achieve a stated objective. The days of technology for technology's sake are long gone (e.g. dot-com tech bubble). Systems and technology can still be "digital" if they don't have a compelling purpose but we generally call them a waste of time, money and resources.

I road-tested the above criteria on the usual suspects (cloud, mobile, social, etc.) and the definitions held firmly together. I asked:

1. Is it electronic?
2. Is it connected to other things or people?
3. Does it consume and produce data?
4. Does it automate a task or a process?
5. Can its functionality be deployed to, and used by, a wide audience?
6. Can it be used remotely or in different form-factors?

…all resting on the foundation of: does it solve a real need or problem?



I believe the criteria above provide a nice framework to discern between digital and non-digital legacy systems. I am sure the definitions will continue to evolve and change with time, but until NIST comes out with their definitive publication on the meaning of digital, I am going to make this my working definition.

And while, for now, we call all of these things "digital" it is only a matter of time that the criteria above becomes the norm for the way we do all computing. Every system, technology and device – for that matter – will be inextricably intertwined with one another. Tomorrow, legacy systems will look as funny as

the record or compact-disc does today. Digital will continue to push us forward as a connected world and bring us closer together through its many ones and zeros.

For all you digital gurus out there, let me know your thoughts on the above criteria as a “definition of digital.” Anything else you would add? Simply use the Facebook comments box below to add your thoughts to the collective digital consciousness! :)

justin greis

hi, i'm justin

(nice to meet you)



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