The Evolution of Digital Ecosystems: Discussion

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This is an important, exciting, provocative, frustrating, exploratory work.

I will not be able to do it justice …
Apologies in advance.
The topic is recombination

- Modular evolution where “no explicit architecture provides a fixed boundary”

Not this—

But this—
My first issue with the paper
There IS a Framework Architecture

- There are design rules
  - But they are very broad
  - Byproduct of the WorldWideWeb
- Two technical versions of the architecture
  - Representational State Transfer (REST)
  - Simple Object Access Protocol (SOAP)
- *The nirvana of interoperability*
What does it mean?

- Programs (called APIs) live on the Web
  - They are supplied by various people, often for free
  - To help users deal with commonly demanded tasks
- You can write a program of programs by setting up a bunch of APIs in a particular sequence
  - Like writing a paper by stringing together famous quotes…
    Washington, Jefferson, Lincoln, Shakespeare, Schumpeter, Dilbert, etc. …
- APIs do generic things and then pass control back to your machine and the next API
- Platforms are not competitive without APIs
“APIs do generic things and then pass control back to your machine and the next API”

- This is identical to “the creative recombination of existing modules”
- Thus today you can study the “evolution” of a software “ecosystem” by tracking usage of APIs
  - Particularly, which came first
  - And which are typically used together
That is the motivation of this paper

It is awesome
That is the motivation of this paper

But remember… the APIs might know where they are going
But WE don’t!
My second issue with the paper

Authors are trying to do *normal science* when they are *really exploring a new domain*
Implications

- There is no empirical base on which to build or test hypotheses
  - Throw out that section

- Unit of analysis is up for grabs
  - Component vs. program
  - Authors chose program, without discussing component
  - Reader wonders, “why this way?”
Implications

- Must explain/justify methods
  - Not simply borrow from biology
  - Topological overlap measure is especially opaque (typo in formula?)

- Nature of evidence needs to be considered
  - Why are APIs important to the reader?
  - How has WordPress (NOT the network) evolved over time?
  - Where would WordPress be without external APIs?
When you have a difficult problem and are using new, unproven methods, it helps to have a gripping question you can answer...
The gripping question…

How important are external APIs to the development of a specialized ecosystem?

- Paper ends here, it should begin here
- This is a management question, consider your audience
- You do not need clustering algorithms to answer this question (at the top level)
And then, the next question …

- *How do external APIs interact with platform-specific APIs?*
  - Clustering is useful here, but your clustering is too coarse
  - Need to show external/internal APIs in the Topological Overlay matrices
The bottom line

- An interesting paper that opens up exciting new lines of inquiry
- A first attempt to look at the structure and evolution of a multi-platform ecosystem
- Uses state-of-the-art network theory from biology
  - but does not interpret it in the new context
- *Stay tuned! This methodology has legs.*