

Serverless and APIs: Rethinking Curriculum in Higher Education

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Serverless

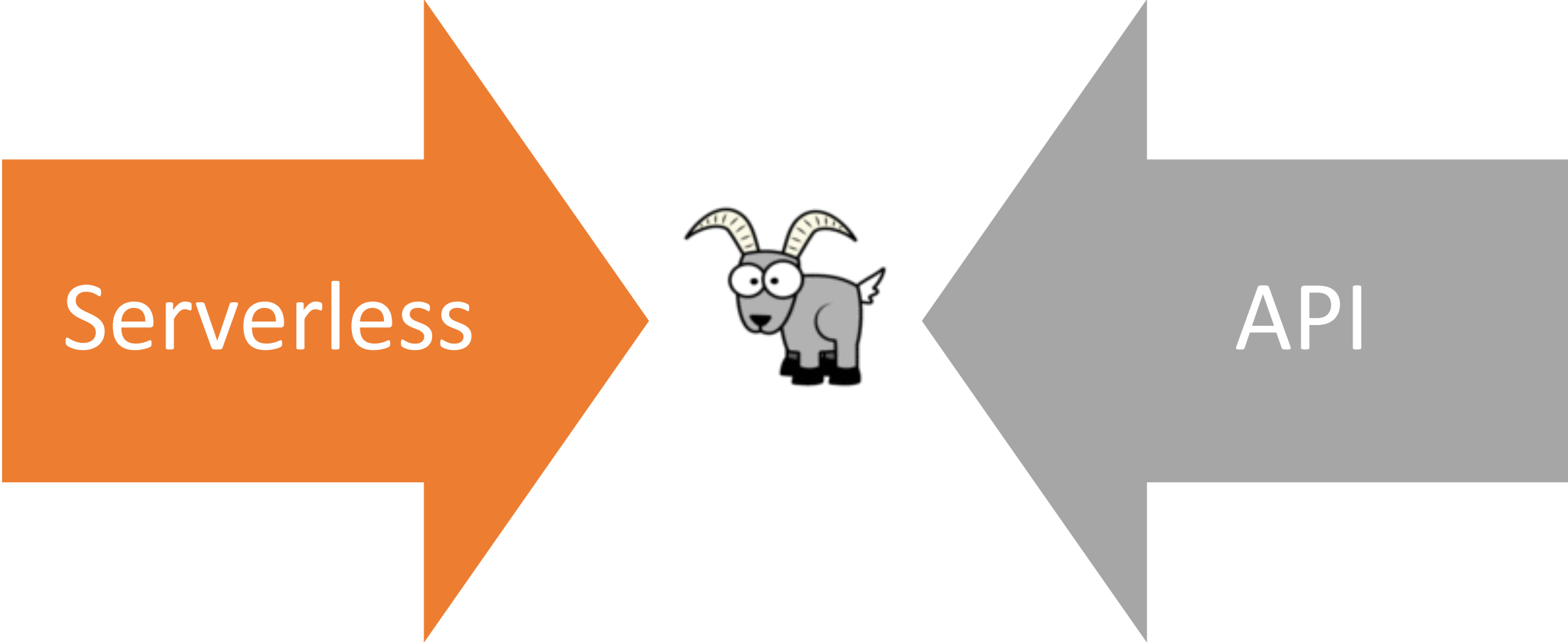
*Serverless computing refers to the concept of building and running applications that do not require server management. It describes a finer-grained **deployment model** where applications, bundled as one or more **functions**, are uploaded to a platform and then **executed**, scaled, and billed in response to the exact demand needed at the moment.*

API

*An API is a software component that — in terms of its operations, inputs, outputs, and underlying data types — implements a function that is **independent** of its "host" app.*

Source: Malinverno, P. Gartner Report, 2017

The end of the AA's?



Challenges

Secure configuration requires sophisticated understanding

Connectivity may be unreliable

Function “cold starts” may cause hiccup on start

Debugging and error recovery is harder

Identity – multiple actors involved in an API call

Triggering lots of functions may lead to inefficiencies

But

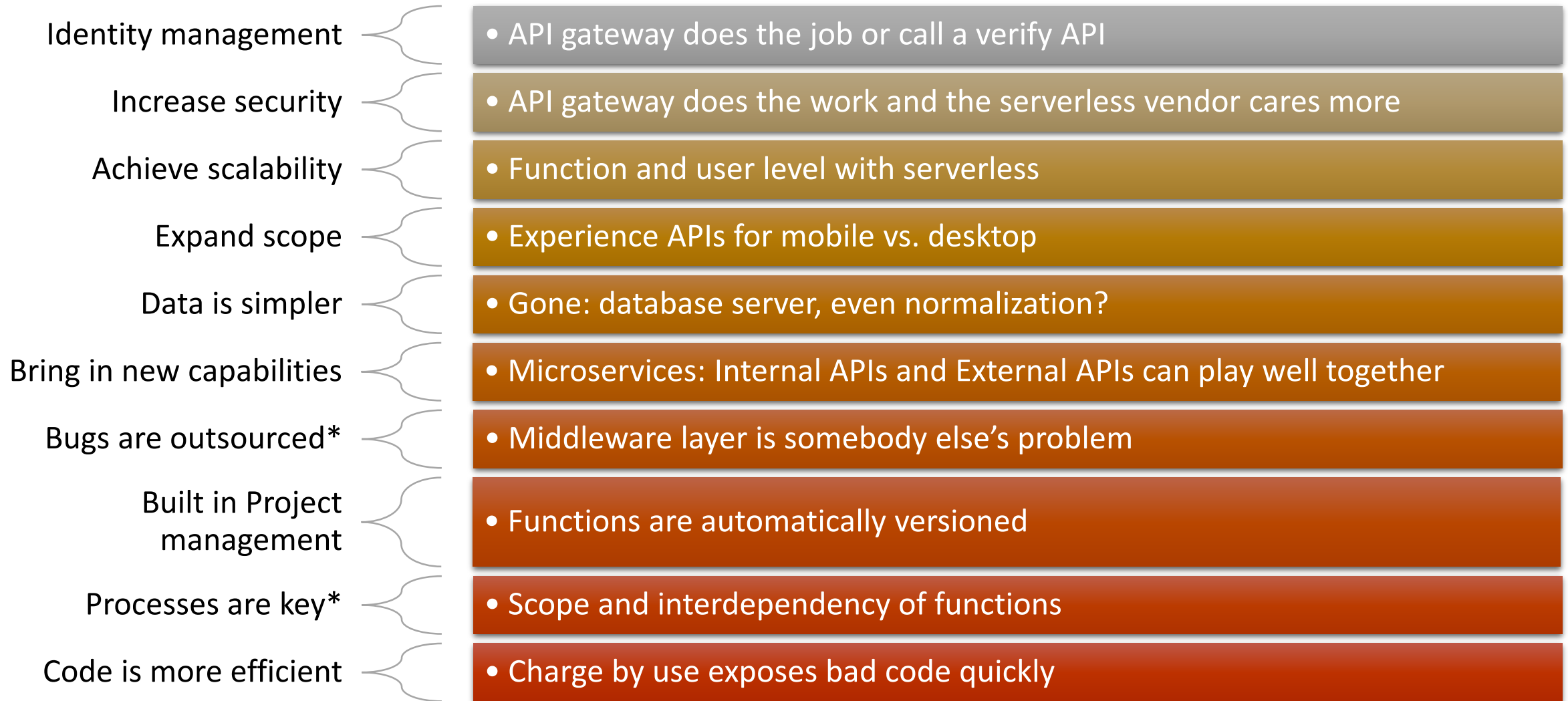
Cost

- Bring in talent embedded in the API
- Outsource hardware, data center, database management

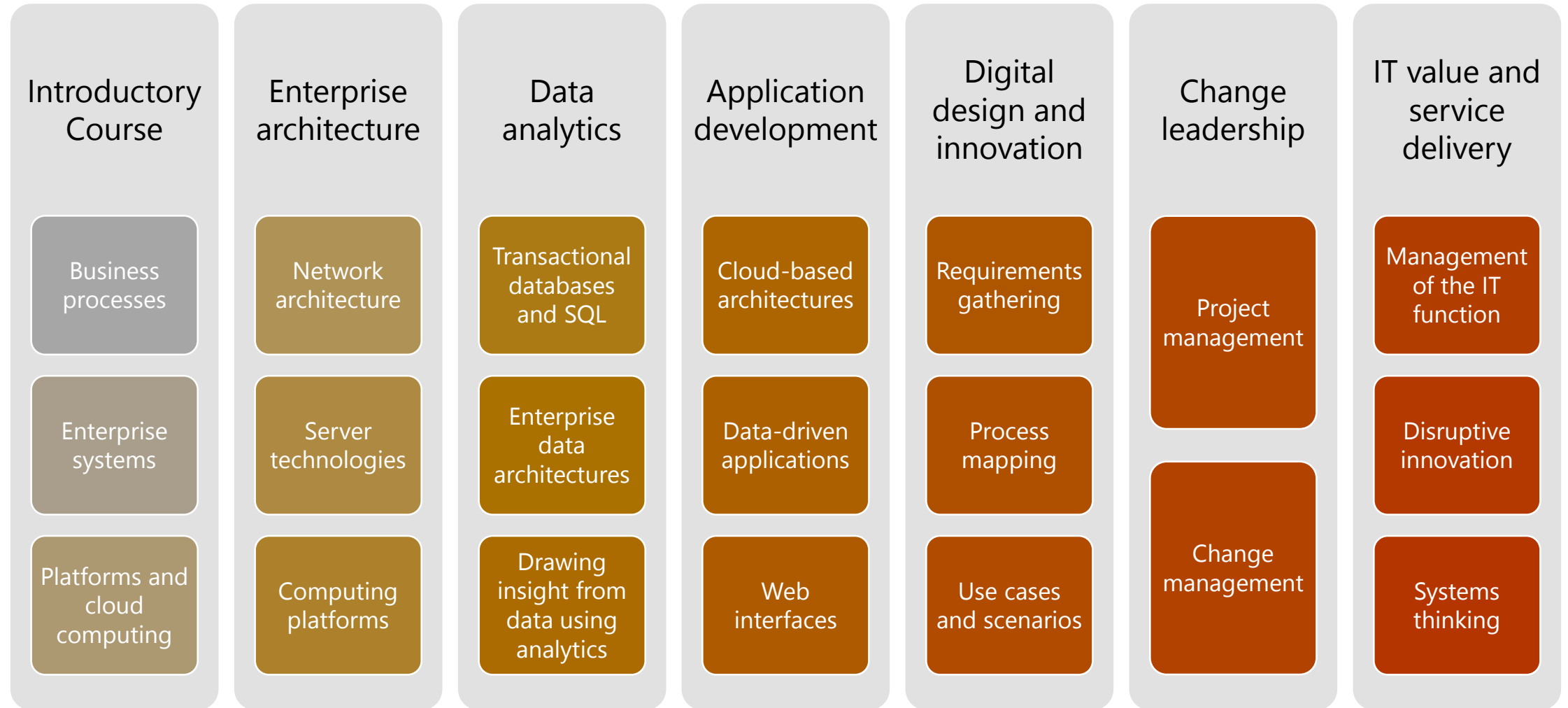
Opportunity

- Use APIs to open/test new markets
- Scale quickly
- Loosely coupled integration enables exploration
 - Business rules and processes are embedded in the API
 - Enable business units – no servers, databases, security – new era of “PC”?

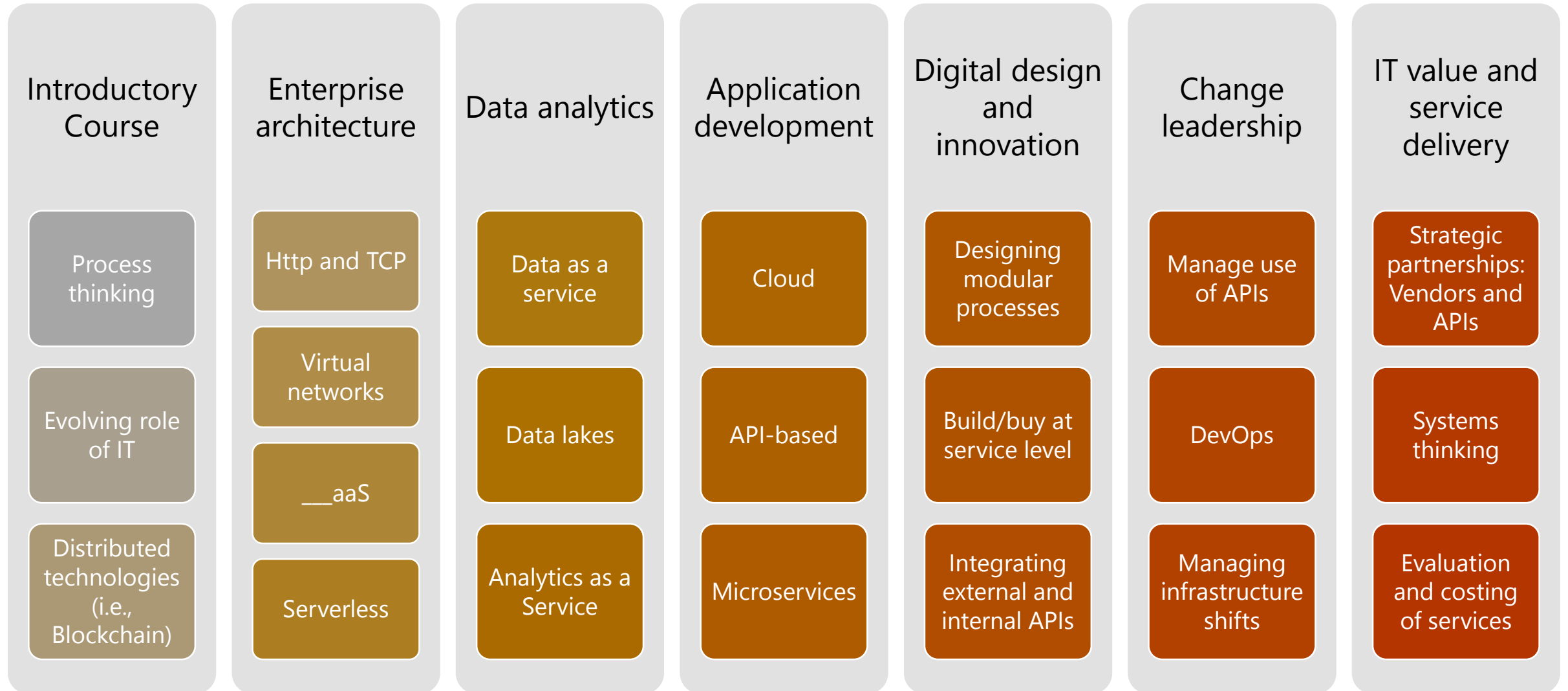
The (near) future



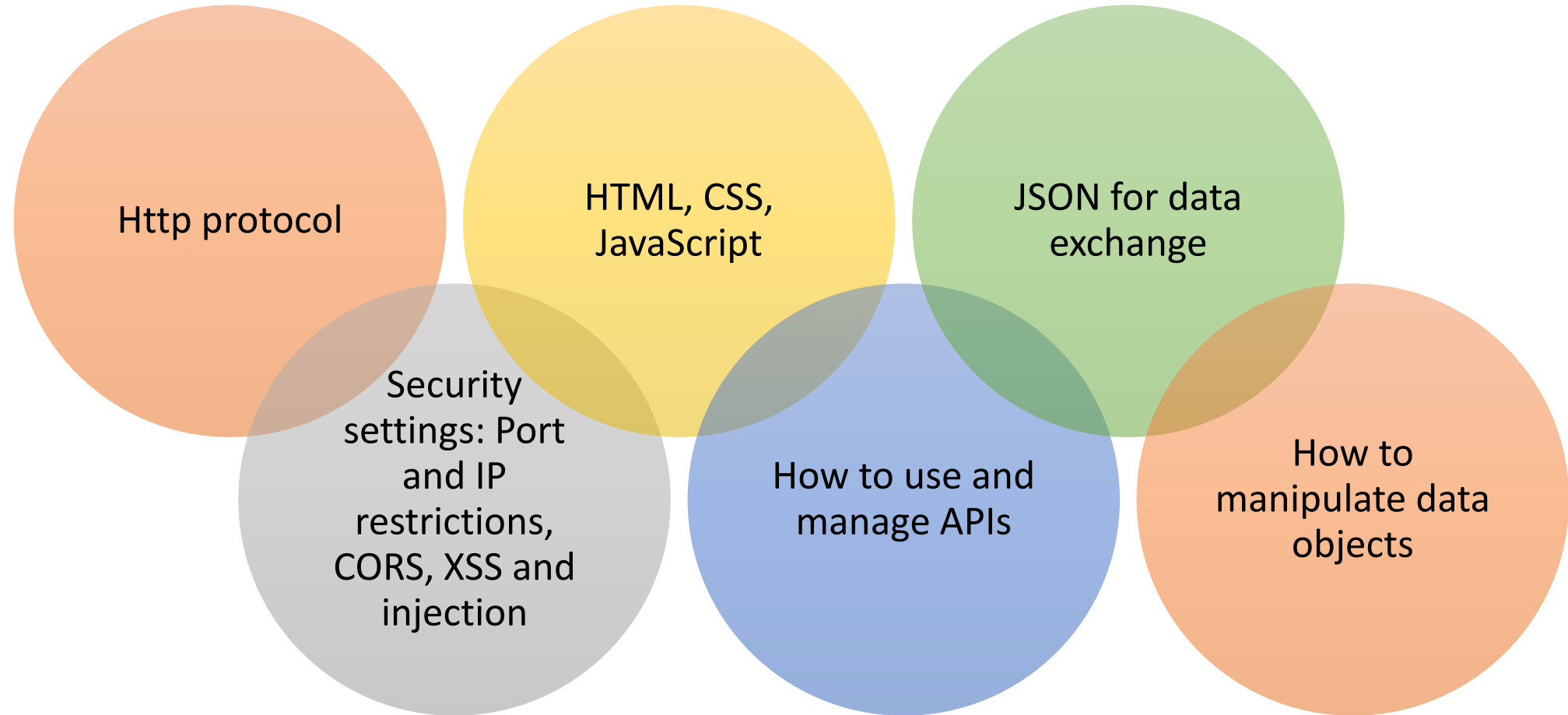
Current state of the curriculum



Implications for entire curriculum



Revised skill set



New School

- Server: Amazon S3 Bucket
 - Configured to serve HTML
 - <http://www.vote4movies.shafer.com.s3-website.us-east-2.amazonaws.com/>
- Amazon API Gateway
 - Establish the API calls to the DB
 - Point and define the mapping to the DB
- Bring in abstraction library
 - <https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js>
- Web API endpoint to POST (INSERT) Data
 - https://wab2aq6r67.execute-api.us-east-2.amazonaws.com/shafer_dynamodb_test/movieid
- Web API endpoint to GET (SELECT) one record
 - https://wab2aq6r67.execute-api.us-east-2.amazonaws.com/shafer_dynamodb_test/movieid/9d43100e-6053-11e8-a4b6-a1fc9129a52b
- Web API endpoint to GET (SELECT) all records
 - https://wab2aq6r67.execute-api.us-east-2.amazonaws.com/shafer_dynamodb_test/movieid

Old School

- VMware Virtual Machine running Linux, Apache, and My SQL which serves: <https://misdemo.temple.edu>
- PHP script on the above
- SQL statements:
- Insert into movies (moviename) values ('star wars');
- Select * from movies where movieid = 1
- Select * from movies