



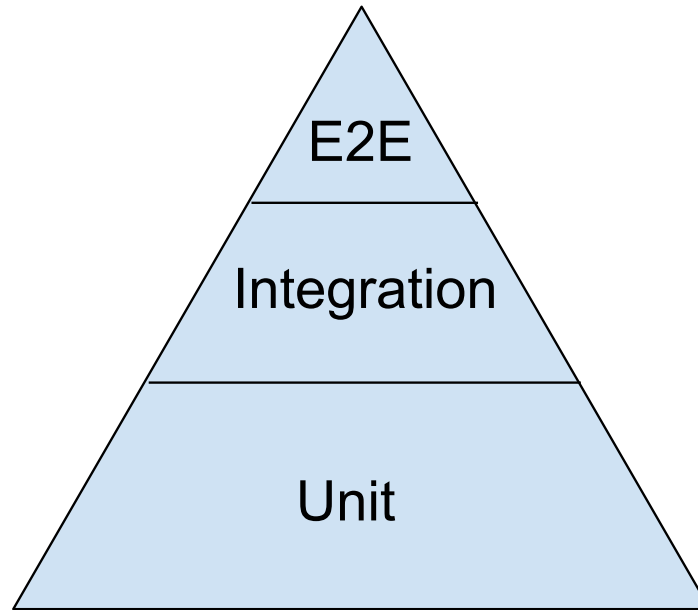
Testing Microservices: fast and with confidence

Stephan Jaensch
@s_jaensch

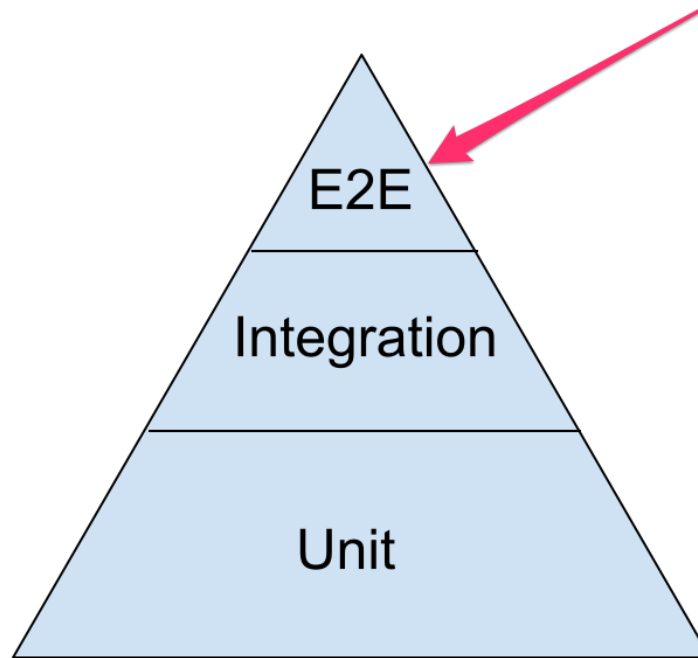


Two years ago...

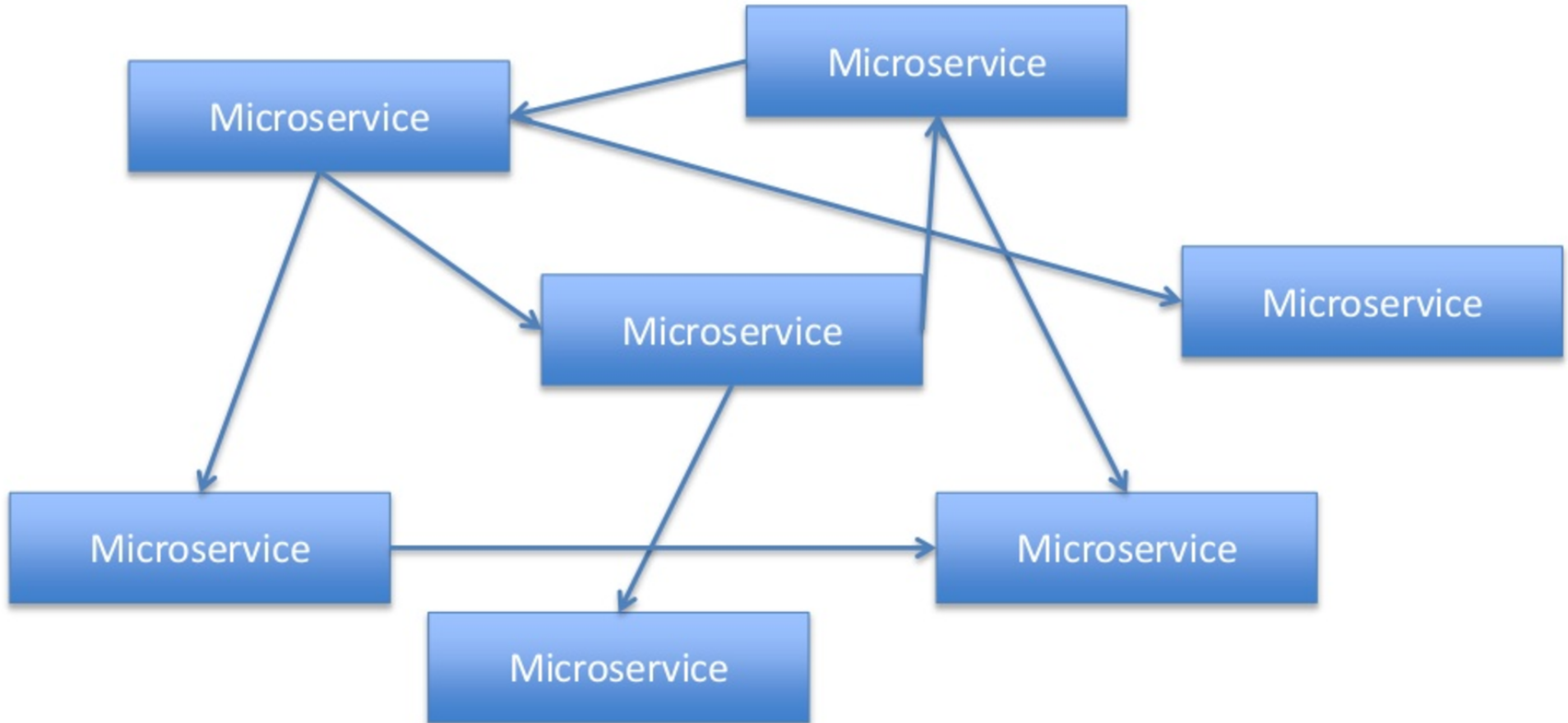
The Testing Pyramid



The Testing Pyramid



Why end to end tests?



Source: <https://www.slideshare.net/danveloper/microservices-the-right-way>

Flakes

 Some tests never ran.

 2019-06-27 11:21

 finished in an hour

 [jenkins](#)

 (no tags)

 [services/biz_app](#)

 [\[redacted\]](#)

[108321d3eb43c6ad50d2be9dbd9f2a3b07abf7e4](#)
(cgit)

 [review:418454](#) [Shipt'd](#)

Job Completion [\(details\)](#)

9 of 9

Test Completion

3640 of 3640

Job Failures (1)

Debug ▾

Expand All

Acceptance Test

Tests Never Ran (18)

Debug ▾

Expand All

18 acceptance/tests/business/detail_acceptance_test.py::test_edit_business_attributes[changeset_data0-expected_response0]

Test Failures (6)

Debug ▾

Expand All

acceptance/tests/account_acceptance_test.py::test_account_info_v2[expected_response0]

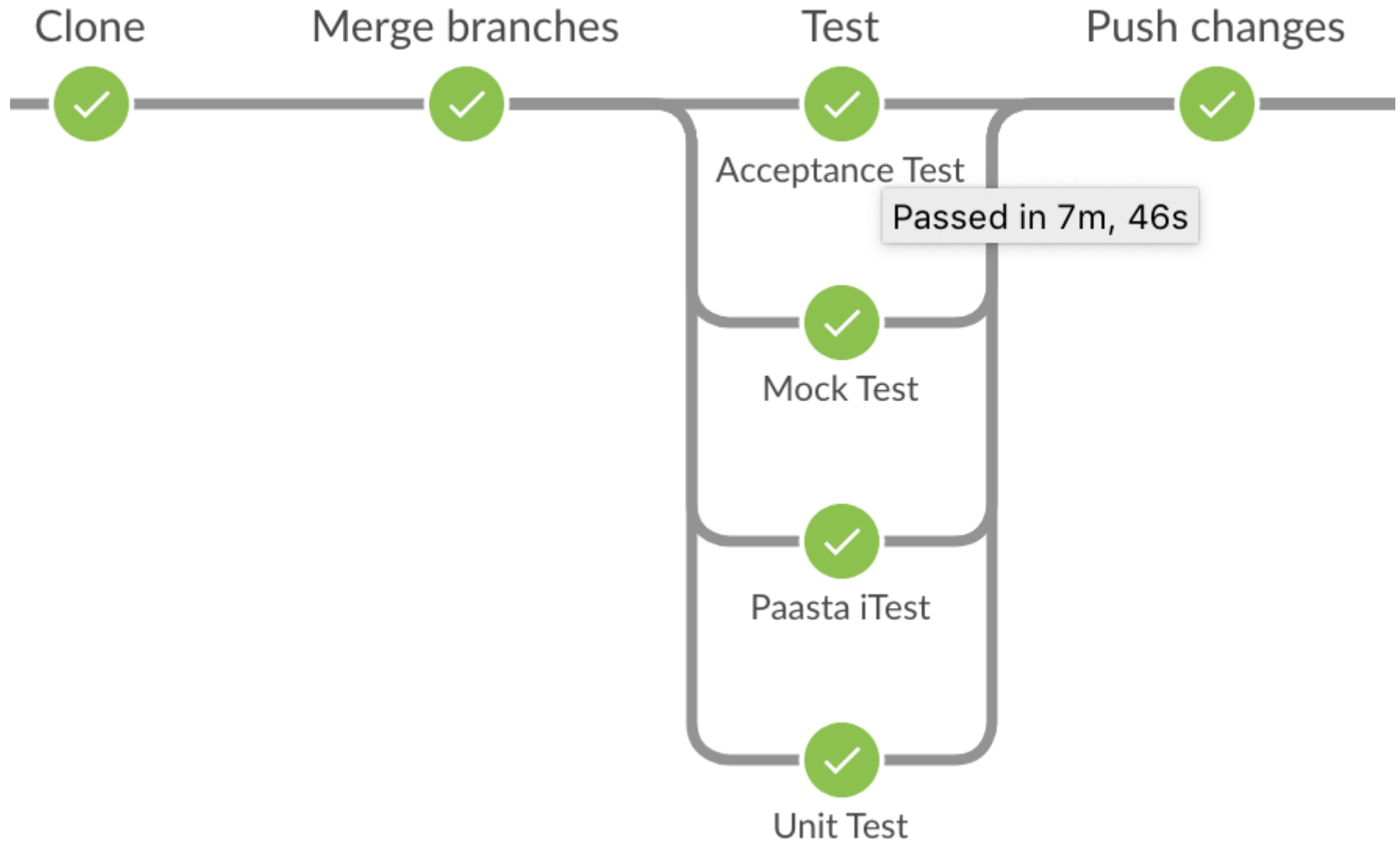
acceptance/tests/business/detail_acceptance_test.py::test_edit_address[8-submit_address1-expected_address_response1]

acceptance/tests/business/detail_acceptance_test.py::test_edit_location

acceptance/tests/business/info_acceptance_test.py::test_info_missing_location_info_v1

acceptance/tests
/user_interface_acceptance_test.py::test_ui_marketing_banner_v1[show_accelerator_banner_since_business_has_v1]

Improving speed and reducing flakiness

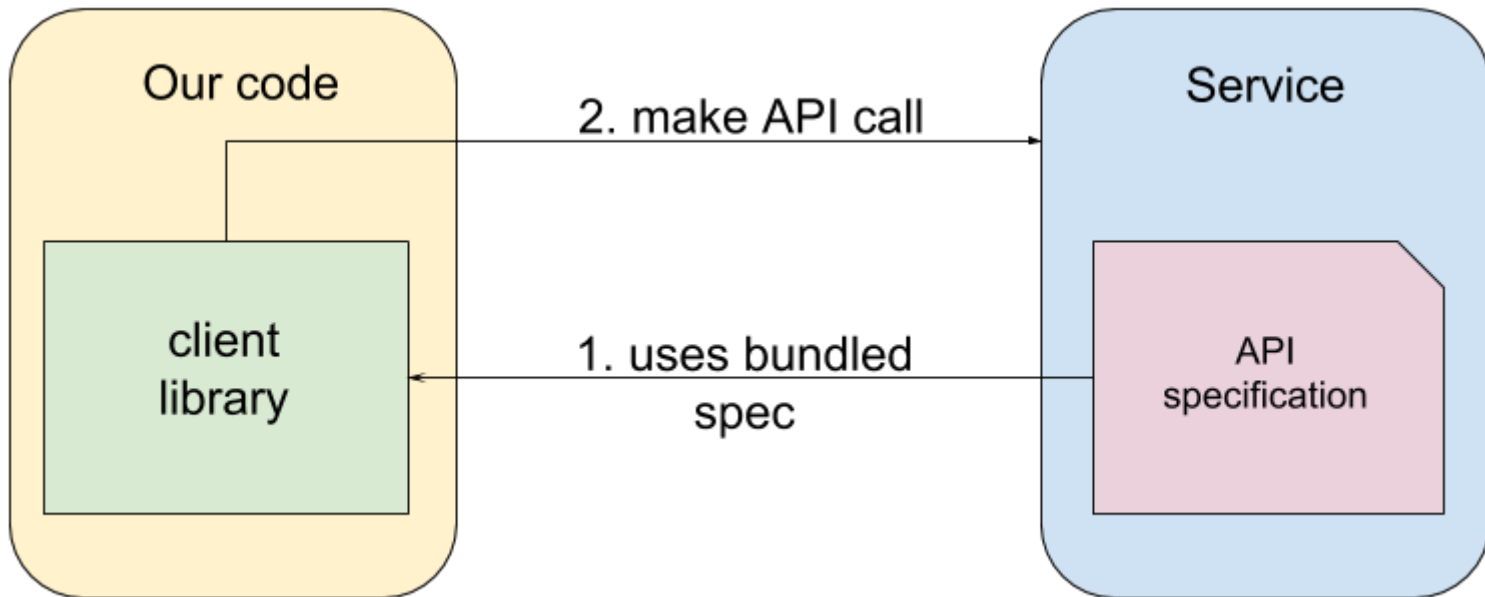


Contract testing

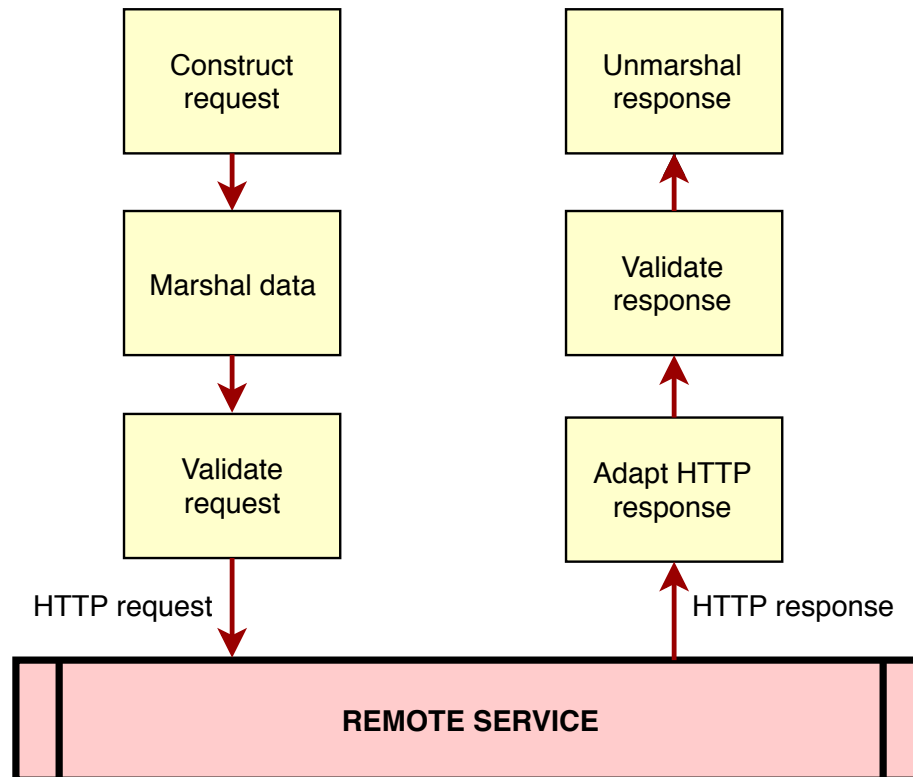
Contract Testing is writing tests to ensure that the explicit and implicit contracts of your microservices work as advertised.

Bob Reselman

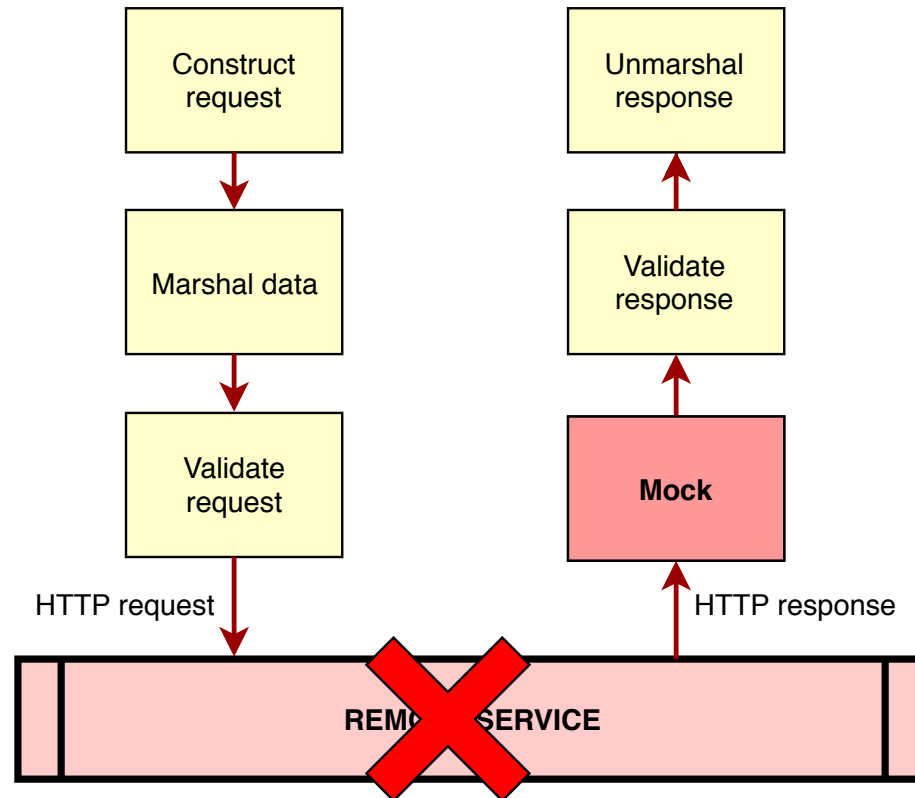
A service call at Yelp



Anatomy of a client library request



Inject mock in client library



Patching the client library

```
class TestExampleHappyhourClient():
    @pytest.fixture(autouse=True)
    def setup_teardown(self):
        with patch_clientlib() as mock_client:
            yield

    def test_get_hours_simple():
        hours = get_hours_simple()

    assert hours == {
        'SUN': {'time_start': 0, 'time_end': 0},
        'MON': {'time_start': 0, 'time_end': 0},
        ...
    }
```

Providing a mock response

```
class TestExampleHappyhourClient():
    @pytest.fixture(autouse=True)
    def setup_teardown(self):
        with patch_clientlib() as mock_client:
            mock_client.hours.getHours\
                .set_return_value_and_status_code(
                    return_value={
                        'FRI': {'time_start': 21, 'time_end': 23},
                        'SAT': {'time_start': 21, 'time_end': 23},
                        'SUN': {'time_start': 21, 'time_end': 23},
                    },
                    status_code=200,
                )
        yield
```


Mocks with errors

```
jsonschema.exceptions.ValidationError:  
  'id' is a required property
```

Conclusion

- End to end tests don't scale infinitely
- Contract tests are supposed to help
- We can leverage existing infrastructure to do consumer driven contract testing (sort of)
- We're relying on the fact that the service adheres to the specification

A large, diverse group of young adults, likely students or young professionals, are gathered together, cheering and raising their hands in excitement. They are dressed in casual attire, and the overall atmosphere is one of high energy and enthusiasm. The background is a plain, light-colored wall.

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Questions?

sjaensch@yelp.com