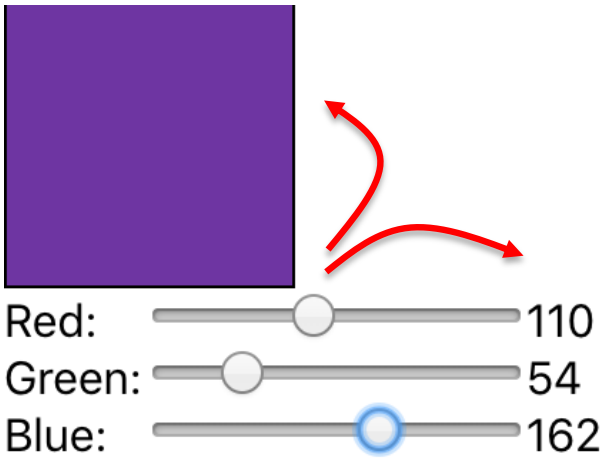
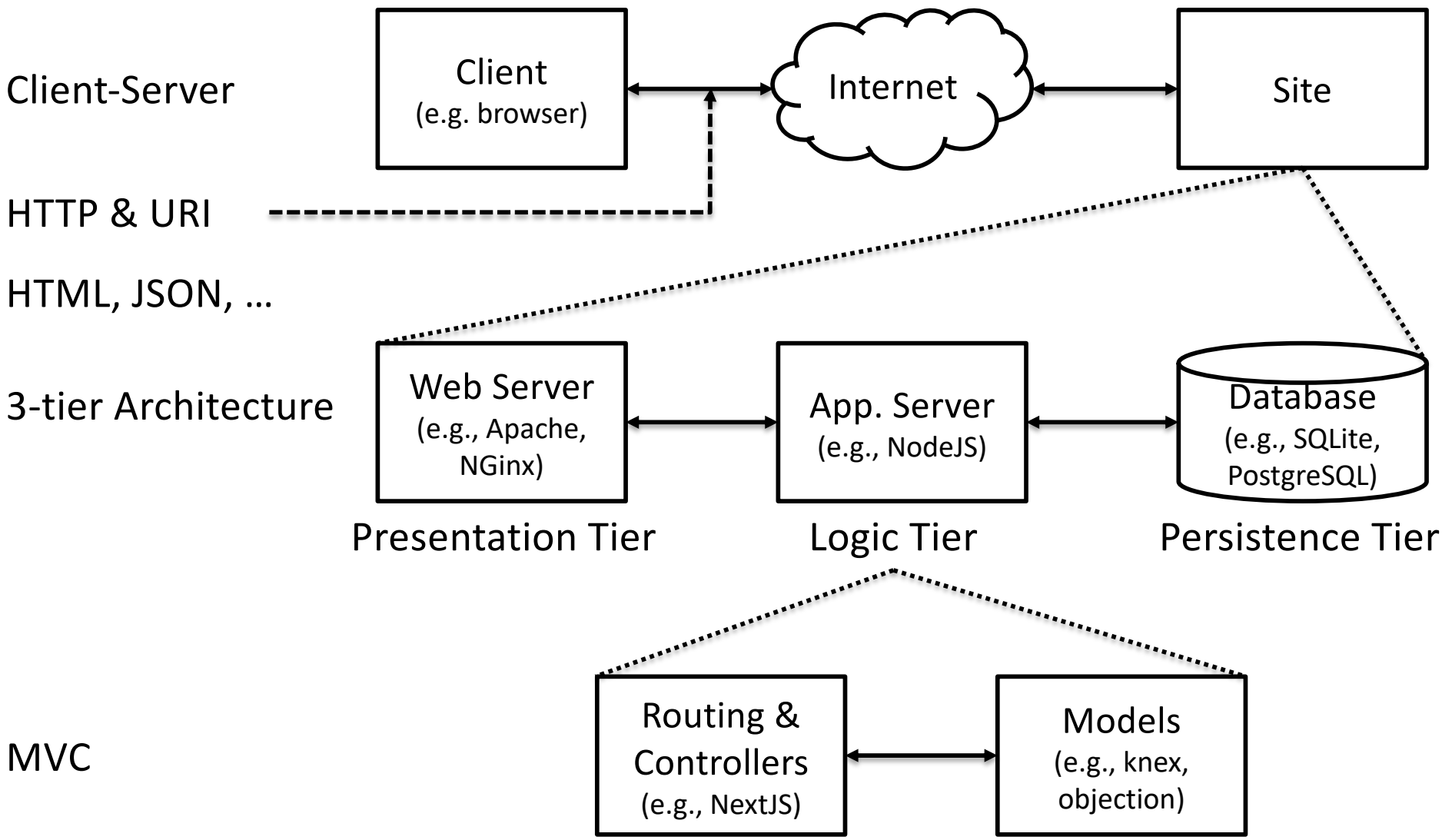
In the beginning…




```
<div class="blue-slider">
  <div class="color-label">blue: </div>
  <input type="range" id="slider-b" …/>
  <span id="value-b"></span>
</div>
```

```
// Set oninput callback for each slider
sliders.forEach((slider) =>
  slider.addEventListener("input", update));

const update = function() {
  colorBox.style.background =
    `rgb(${sliders[0].value}, ${sliders[1].value}, ${sliders[2].value})`;
   sliders.forEach((slider, index) =>
     labels[index].innerHTML = slider.value);
};
```


Client-Server
Client
(e.g. browser)
Internet
Site
HTTP & URI
HTML, JSON, …
3-tier Architecture
Web Server
(e.g., Apache, NGinx)
App. Server
(e.g., NodeJS)
Database
(e.g., SQLite, PostgreSQL)
Presentation Tier
Logic Tier
Persistence Tier
MVC
Routing & Controllers
(e.g., NextJS)
Models
(e.g., knex, objection)

Callbacks and more callbacks!

```
const wrapValue = (n) => { // function(n) {
  let local = n;
  return () => local; // function () { return local; }
}

let wrap1 = wrapValue(1);   // () => 1
let wrap2 = wrapValue(2);   // () => 2
console.log(wrap1()); // What will print here?
console.log(wrap2()); // What will print here?
```

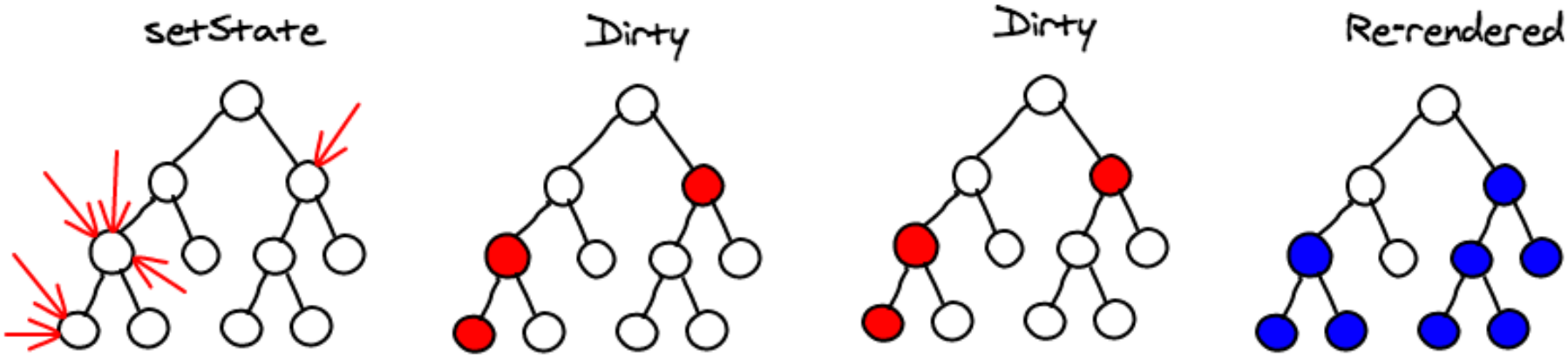
Single source of truth!


```
function ColorPicker() {
  const [red, setRed] = React.useState(0);
  const [green, setGreen] = React.useState(0);
  const [blue, setBlue] = React.useState(0);

  const color = {
    background: `rgb(${red}, ${green}, ${blue})`
  };
  return (
    <div>
      <div className="color-swatch" style={color} />
      <LabeledSlider label="Red" value={red} setValue={value => setRed(value)} />
      <LabeledSlider label="Green" value={green} setValue={value => setGreen(value)} />
      <LabeledSlider label="Blue" value={blue} setValue={value => setBlue(value)} />
    </div>
  );
}
```

Props down!

Callbacks up!



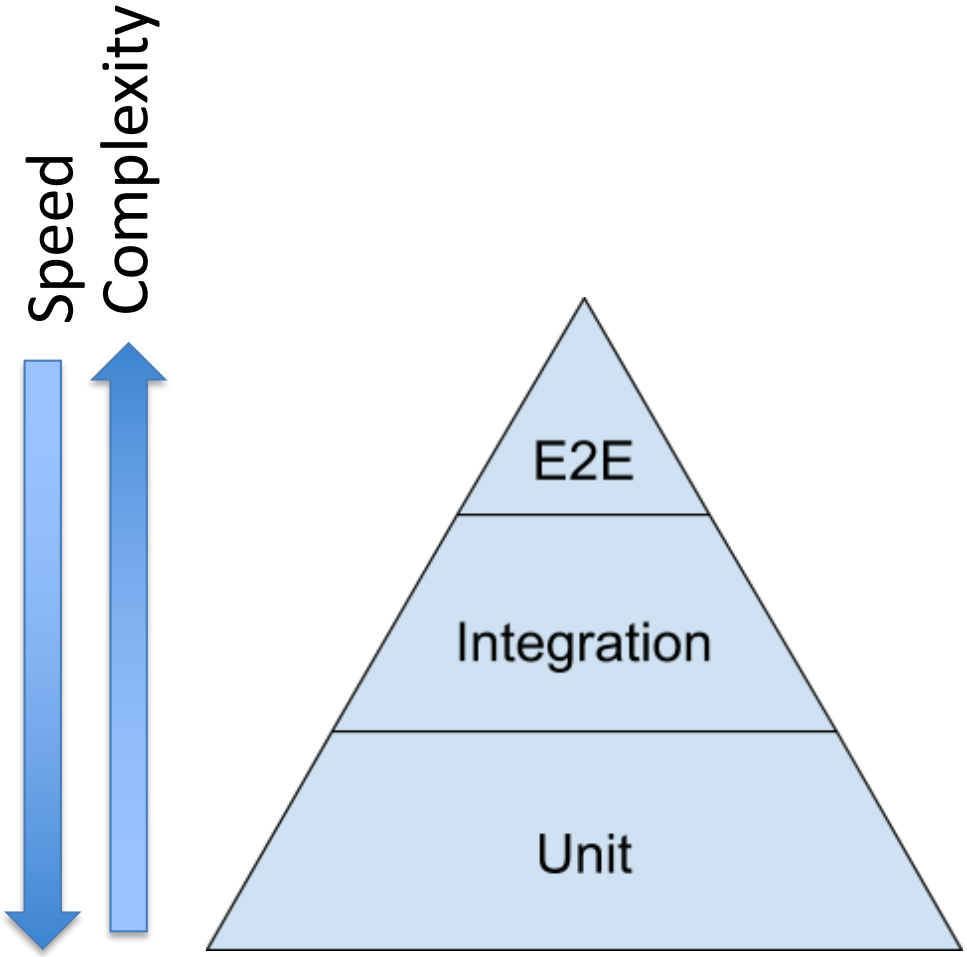
Route	Controller Action
POST /api/films	Create new movie from request data
GET /api/films/:id	Read data of movie with id == :id
PUT /api/films/:id	Update movie with id == :id from request data
DELETE /api/films/:id	Delete movie with id == :id
GET /api/films	List (read) all movies

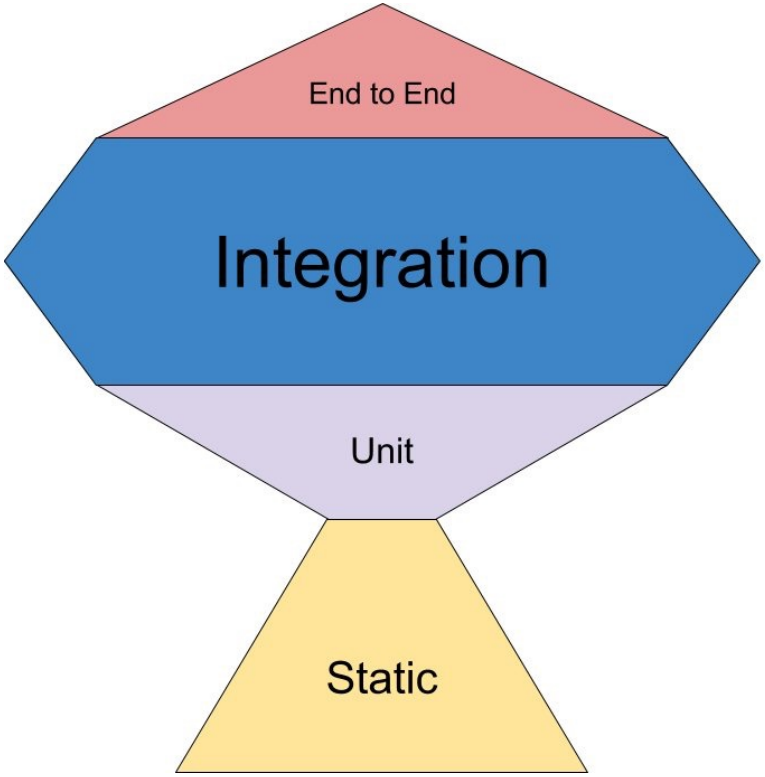
```
nc.get(async (req, res) => {
  const films = Film.query().withGraphFetched('genres’);
  res.status(200).send(films);
});
```

	Relational (RDBMS)	Non-Relational
Data	Table-oriented	Document-oriented, key-value, graph-based, column-oriented, …
Schema	Fixed schema	Dynamic schema
Joins	Used extensively	Used infrequently
Interface	SQL	Custom query language
Transactions	ACID	CAP

```
SELECT * FROM people
WHERE age > 25;
```

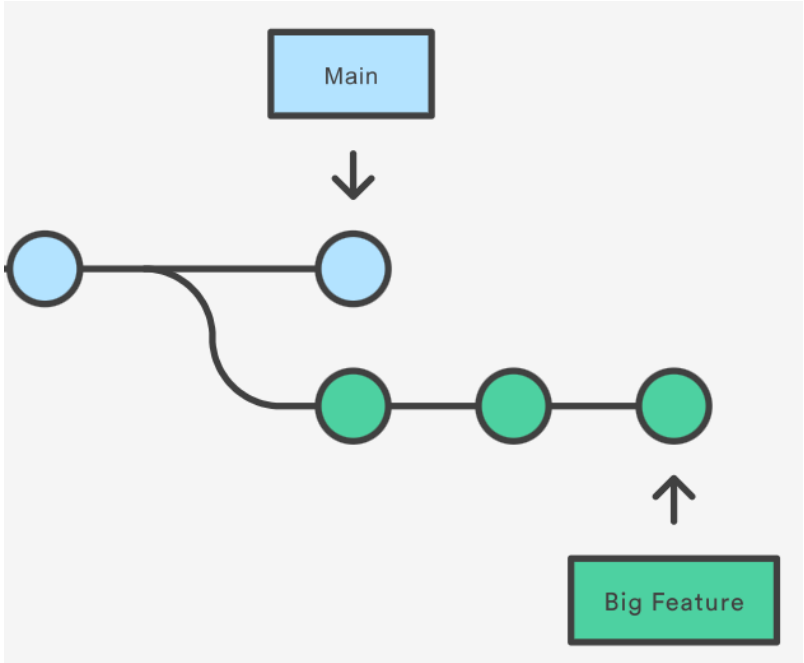
```
db.people.find(
   { age: { $gt: 25 } }
)
```





Google testing blog

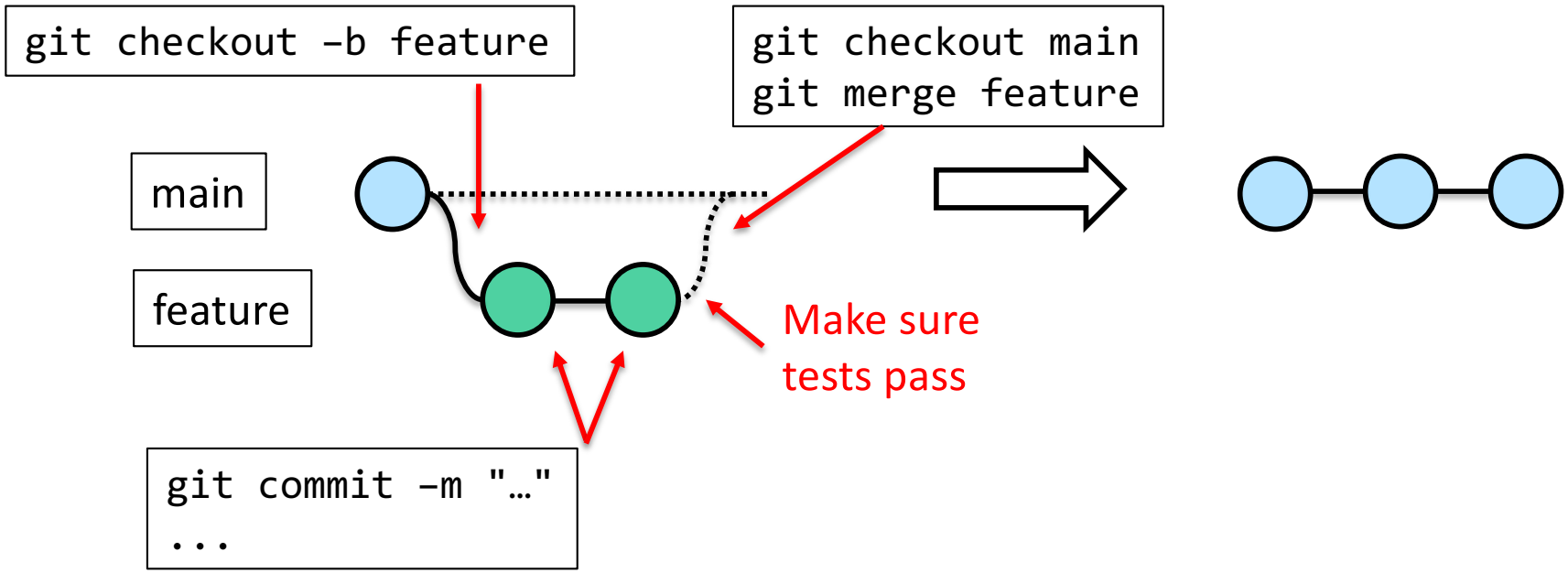
Kent C Dodds "Write tests. Not too many. Mostly integration."



Main is always “deployable”

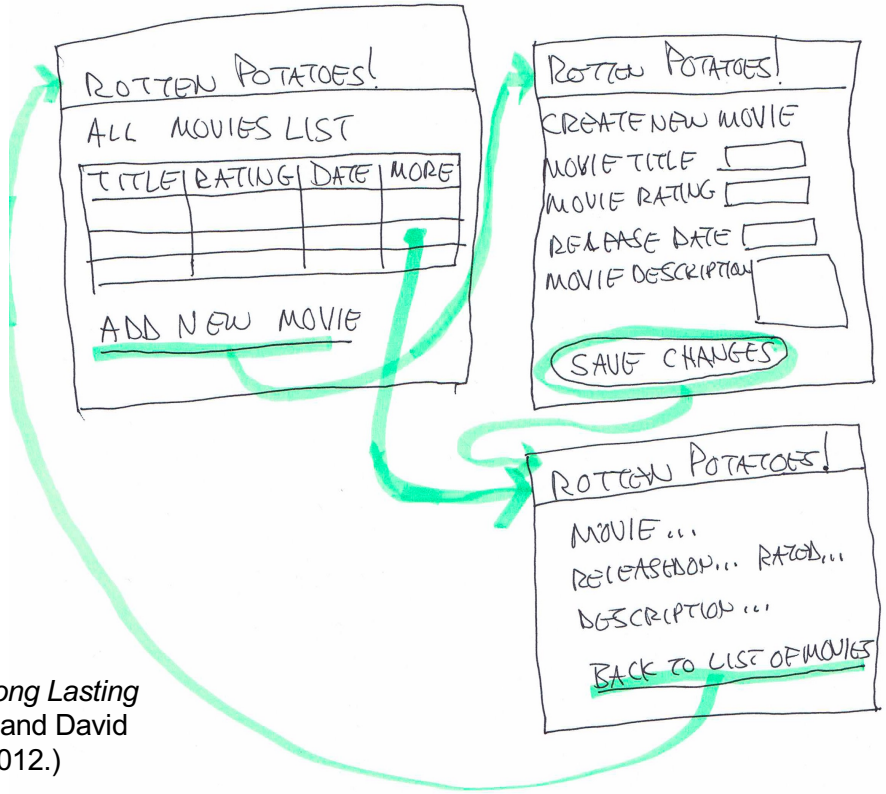
- Tests pass
- No incomplete features

Short-lived branch for single feature



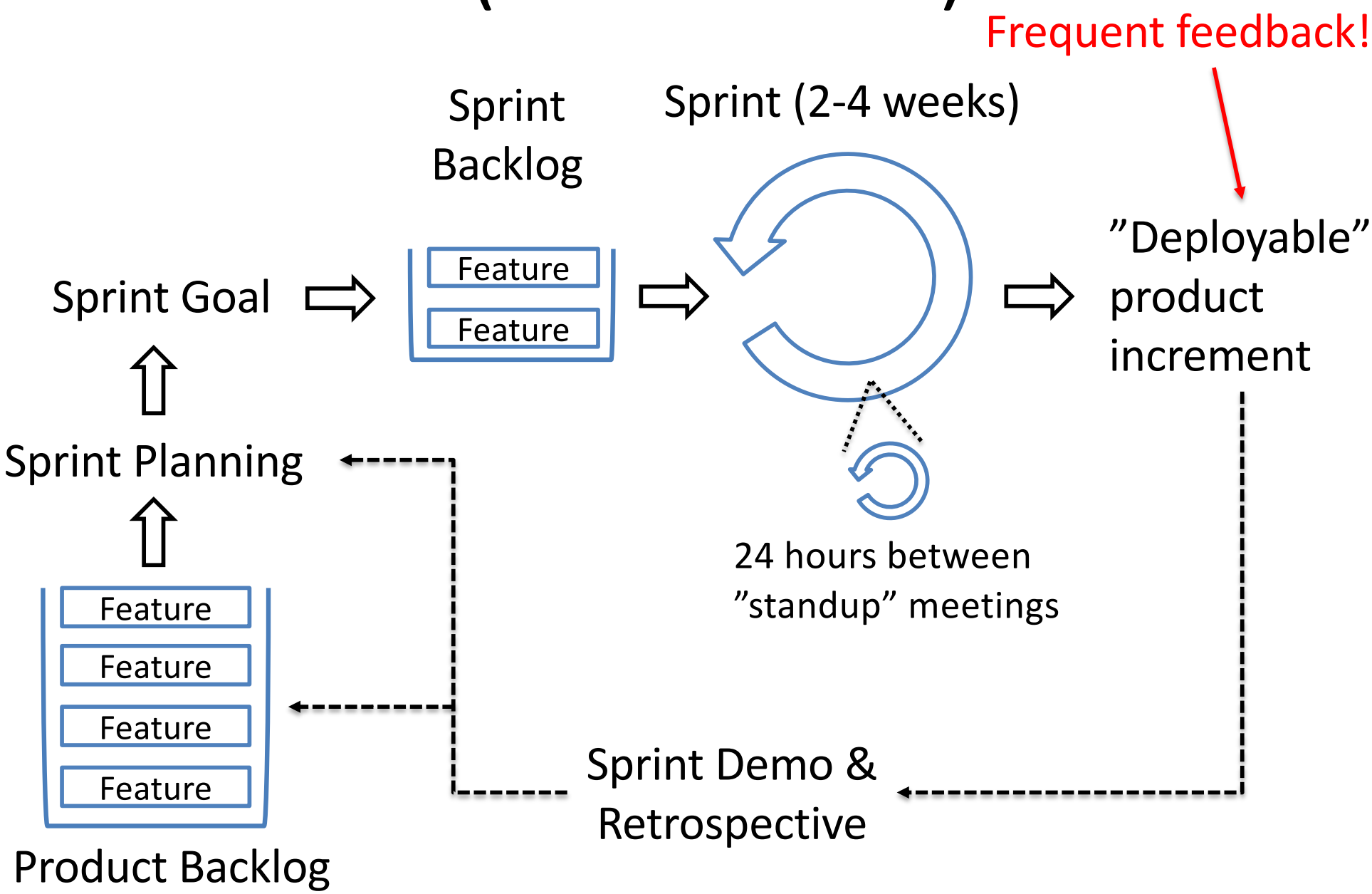
Movie Details
As a user,
I want to click on a movie,
so that I can get more info

Film	
Responsibility	**Collaborator**
Knows its title	
Knows its plot overview	
…	
Know which genres it is	Genre



(Figure 4.4, *Engineering Long Lasting Software* by Armando Fox and David Patterson, Alpha edition, 2012.)

“Scrum-ish” (in a nutshell)



Iterative Incremental

http://itsadeliverything.com/revisiting-the-iterative-incremental-mona-lisa

Simplepedia

localhost:3000/articles/73

Update

Simplepedia

ADD EDIT

1 2 4 5 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

2009 World Touring Car Championship
2013 McGrath Cup
2015 Canadian Grand Prix

2009 World Touring Car Championship

The 2009 World Touring Car Championship season was the sixth FIA World Touring Car Championship season, the fifth since its 2005 return. It began on 8 March, and ended on 22 November, after twenty-four races. The championship, which was reserved for Super 2000 Cars and Diesel 2000 Cars, comprised two titles, the FIA World Touring Car Champion for Drivers and the FIA World Touring Car Champion for Manufacturers. Italian Gabriele Tarquini won the Drivers' Championship by four points from SEAT Sport team-mate Yvan Muller, with BMW Team Germany's Augusto Farfus finishing third ten points behind Muller. The Manufacturers Championship was retained by SEAT beating BMW by just three points. Tom Coronel took the Independents' Trophy for SUNRED Engineering, which won the Teams' Trophy.

11/8/2016, 8:04:50 AM

SMALL (So Many Acronyms Littering the Lectures)

- F.I.R.S.T.
- I.N.V.E.S.T.
- R.A.S.P.
- DRY
- SoC
- SOFA
- SOLID
- SaaS
- TDD, BDD
- MVC
- WISBNWIW
- ACID
- CRUD(L)
- HTML / DOM / CSS / JSX
- CI / CD
- UI
- AJAX
- REST API
- URI / URL
- TCP/IP
- JSON
- CRC
- ORM
- POJO
- SQL / RDMS
- VCS
- SLO / SLA

Take-aways

- Behind every design decision there should be a user story (a stakeholder and a motivation!)
- Testing, not just a class requirement, it's a good idea
- Develop iteratively *and* incrementally
- There should be one source of truth
- Don't repeat yourself
- Don't mutate props or state
- Do <u>really</u> read error messages
- Automate all the things
- Don't break the "Build"
- Program strategically not tactically

earthcam.com