mXpress

Scrum 3

By Team MX

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mXpress Emergency Vehicle Routing System

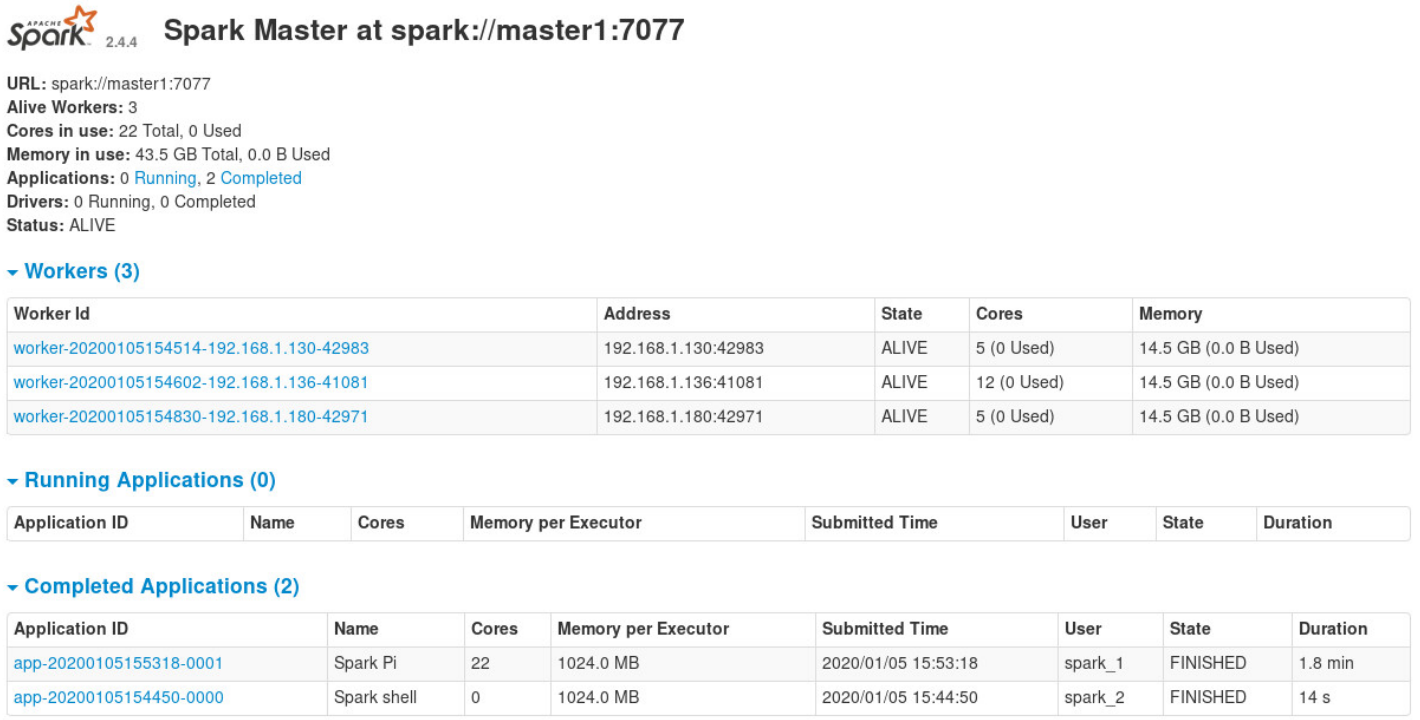
Solving slow emergency response times in large cities

Fills the need for high quality, specialized routing systems for emergency dispatchers

Innovates by utilizing both batch and stream big data coupled with AI to do predictive and reactive trip planning

Potentially allows for consumer vehicle routing using batch data

Adaptable framework allows for multiple qualities of service provided



Spark Master at spark://master1:7077

URL: spark://master1:7077
Alive Workers: 3
Cores in use: 22 Total, 0 Used
Memory in use: 43.5 GB Total, 0.0 B Used
Applications: 0 Running, 2 Completed
Drivers: 0 Running, 0 Completed
Status: ALIVE

Workers (3)

Worker Id	Address	State	Cores	Memory
worker-20200105154514-192.168.1.130-42983	192.168.1.130:42983	ALIVE	5 (0 Used)	14.5 GB (0.0 B Used)
worker-20200105154602-192.168.1.136-41081	192.168.1.136:41081	ALIVE	12 (0 Used)	14.5 GB (0.0 B Used)
worker-20200105154830-192.168.1.180-42971	192.168.1.180:42971	ALIVE	5 (0 Used)	14.5 GB (0.0 B Used)

Running Applications (0)

Application ID	Name	Cores	Memory per Executor	Submitted Time	User	State	Duration

Completed Applications (2)

Application ID	Name	Cores	Memory per Executor	Submitted Time	User	State	Duration
app-20200105155318-0001	Spark Pi	22	1024.0 MB	2020/01/05 15:53:18	spark_1	FINISHED	1.8 min
app-20200105154450-0000	Spark shell	0	1024.0 MB	2020/01/05 15:44:50	spark_2	FINISHED	14 s

Project Progress

- Fully functional Spark & Hadoop cluster, OSRM, and Kafka servers
- More detailed documentation
- Mapped sensors to geographic position
- Fixed everything!

Emmy the EMS Tech

"I didn't even want a cell phone until last year!"

Age: 48
Work: EMS Tech
Family: Single, 3 Kids
Location: Brampton
Character: Anti-technology

Personality

Introvert — Extrovert

Thinking — Feeling

Sensing — Intuition

Judging — Perceiving

Socialite | Old Fashioned | Stubborn

Goals

- To retire early
- Meet a new husband, have the kids grow up and move out
- Avoid change and continue status quo at work

Frustrations

- Getting new glasses when her prescription changes
- Her kids insisting that she get new social media accounts
- Having to use technology instead of intuition for driving around the city

Bio

Loves her kids to death. Not great with technology. Her kids show her how to use her phone. Never used a computer outside of work. Only has experience using Windows 2000, XP and Office 2006. Frustrated with how bad her previous interactions with technology are. Wants to use the software as little as possible, has no desire to sit through weeks of training to learn how to use the routing program. Has slightly deteriorating eyesight and would benefit from a distraction free/easy to read interface.

Motivation

Incentive

Fear

Growth

Power

Social

Adam the Ambulance Driver

"Bitcoin is the future"

Age: 22
Work: EMS Tech
Family: It's Complicated
Location: Winnipeg
Character: Narcissist

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

Hipster | Techy | Ignorant | Power Hungry

Goals

- To become a self made millionaire
- Buy a new Mercedes
- Become World Powerlifting Champion
- Get away with doing as little work as possible while maximizing gains

Frustrations

- People who don't lift
- Cryptocurrency FUD
- Slow drivers and traffic jams
- Coffee that isn't how he ordered it

Bio

Thinks of himself as a tough guy. Prides himself on having the fastest average EMS response times in the province. Hates doing work. Wants to have a cell phone on the dashboard with the fastest updated traffic patterns so he can get places faster. Sometimes reckless, but with good intentions. Enjoys new technology, even if it hardly works.

Motivation

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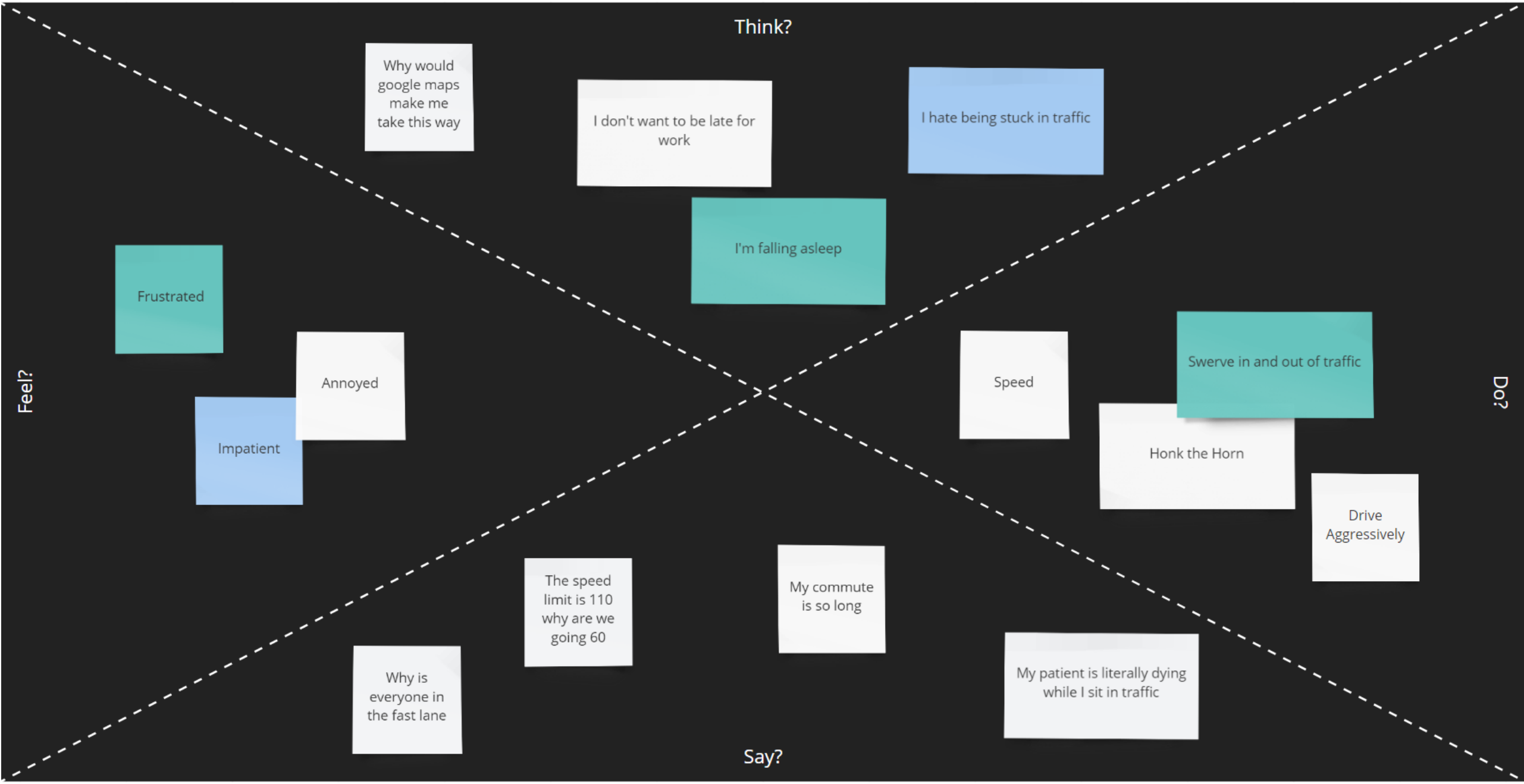
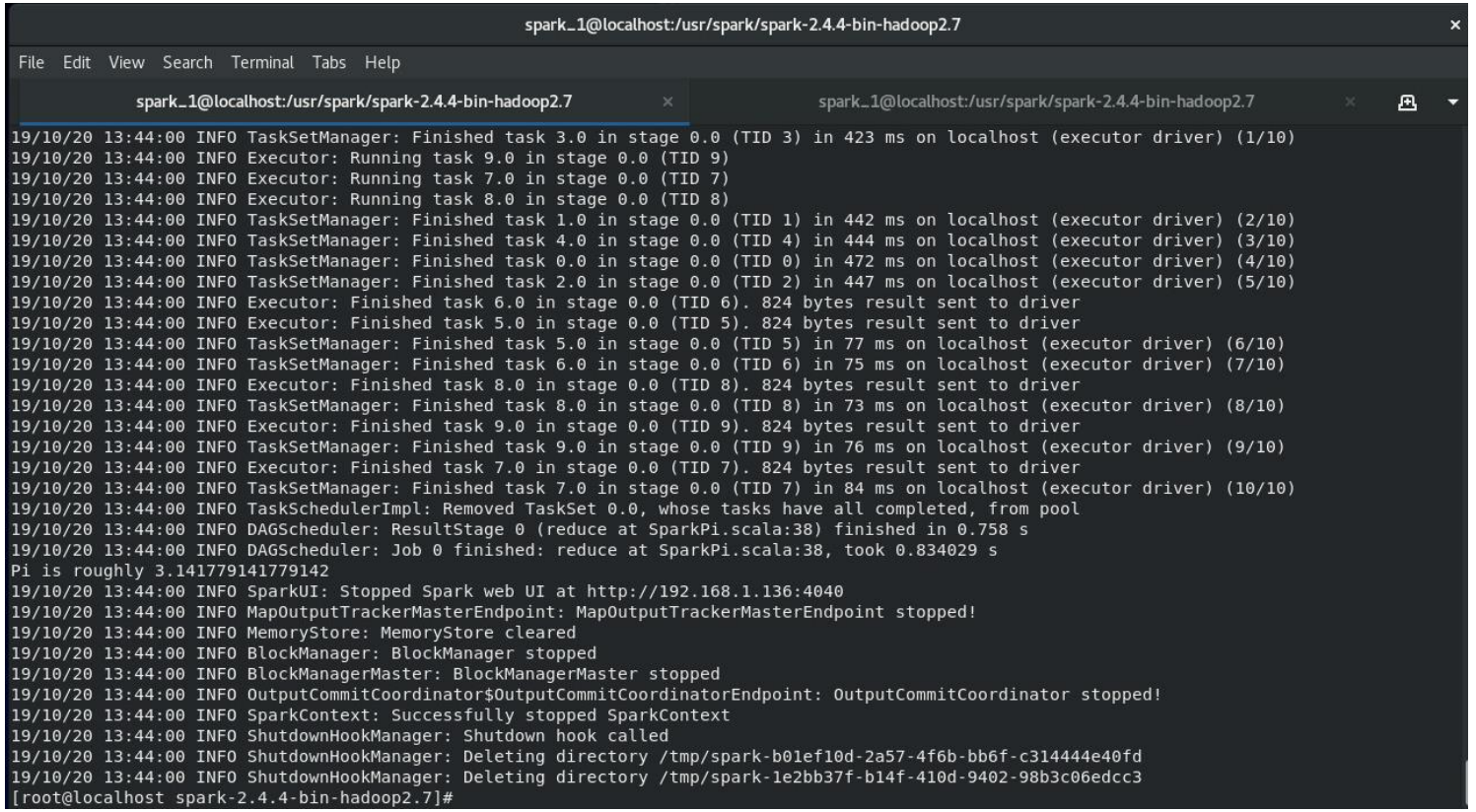

Think?
Why would google maps make me take this way
I don't want to be late for work
I hate being stuck in traffic
I'm falling asleep
Feel?
Frustrated
Annoyed
Impatient
Do?
Speed
Swerve in and out of traffic
Honk the Horn
Drive Aggressively
The speed limit is 110 why are we going 60
My commute is so long
Why is everyone in the fast lane
My patient is literally dying while I sit in traffic
Say?

Next Steps

- Streaming simulation
- More advanced programming in Scala
- Output of Spark CSV -> MongoDB -> OSRM

Backbone & Testing

- 3 Node Spark Cluster
  - Distributed Compute Load
  - Multiple Execution Units
- Running Scala code on cluster
- Performance Testing
  - Ethernet Bandwidth
  - Connect/Disconnect time
  - Divide/Join time



Group Reflection

- Do you feel you are on track?
  - Yes, but some technical issues slowed down progress. Next 2 weeks have lots of plans to program further
- Do you feel there are barriers to your success (if any)?
  - Architecture Convolutions (DB's)
  - Enterprise grade hardware requirements – Execution units/RAM
- Do you need any help going forward?
  - Nope
- Any other questions or concerns?
  - Nope