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Istio Service Mesh at Enterprise Scale

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Who are we?

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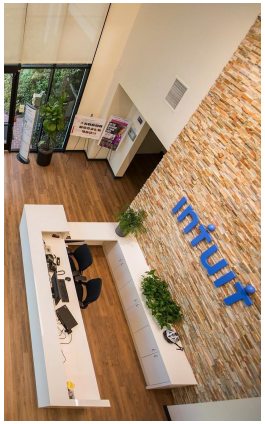
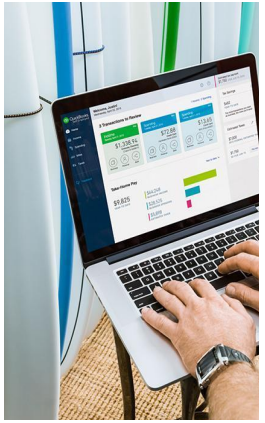
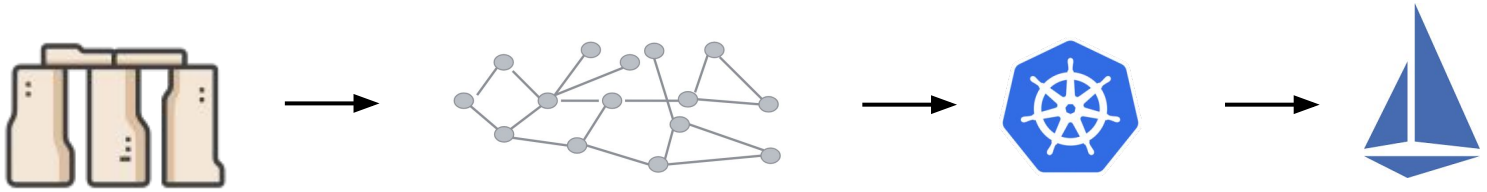
1983	1993	5,000	20	$6.8B FY19	50M
Founded	IPO	Developers	Locations	Revenue	Customers





Why Service Mesh?

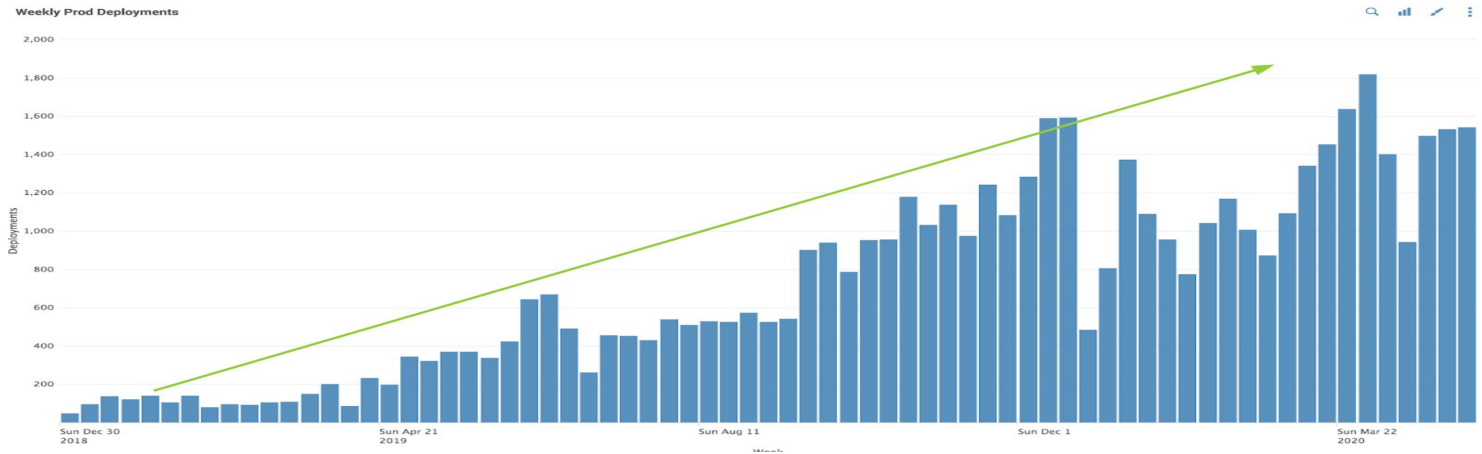


Monolith Era → Microservices → Kubernetes → Service Mesh Istio

Intuit Statistics

- 900+ Teams
- 5000+ Developers

- 200+ Clusters
- 7000+ Namespaces
- ~9200 Nodes varies with autoscaling



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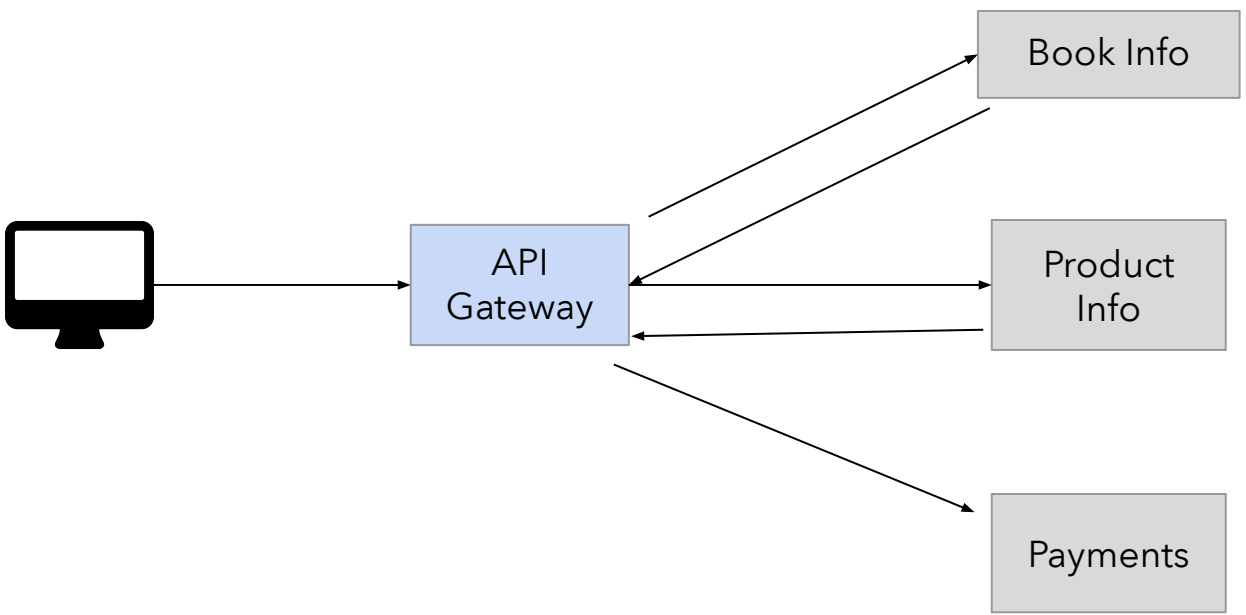
Admiral

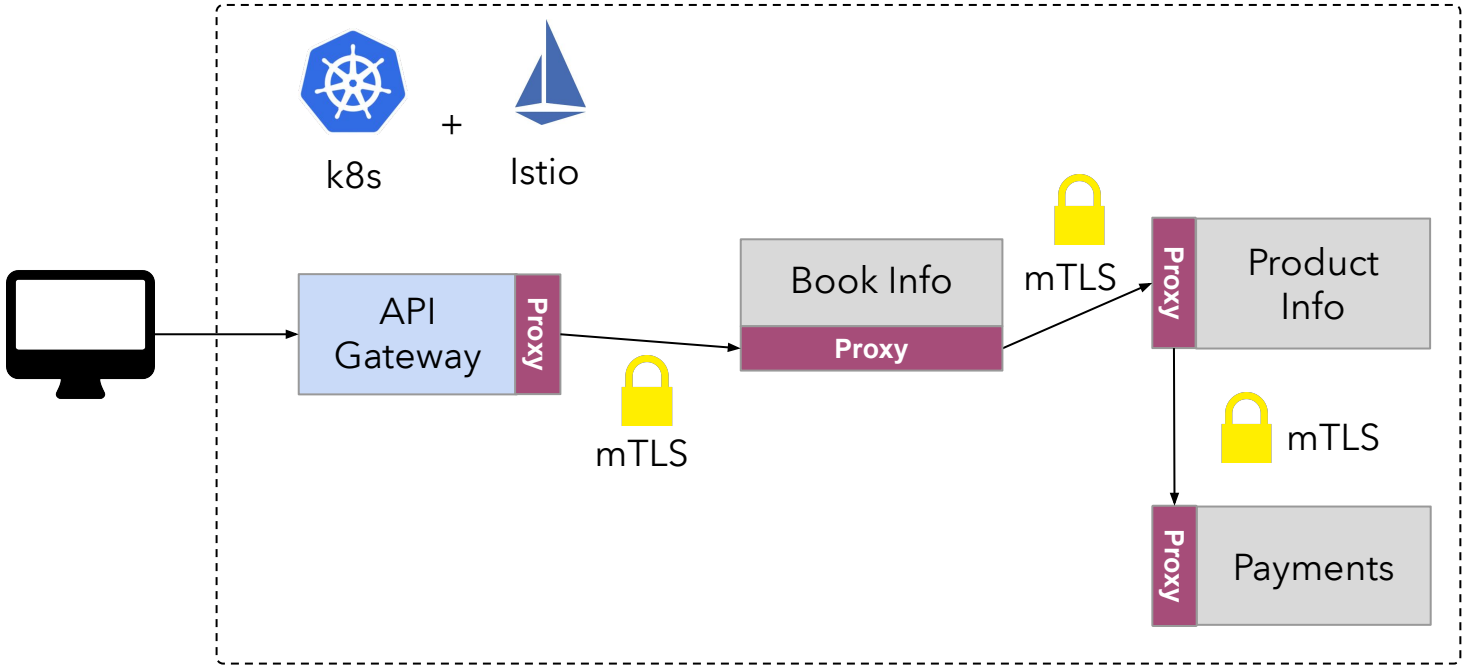
Hub and Spoke



✓ Security
✓ Visibility
✓ Traffic Shaping

✘ Latency
✘ Single Point of Failure

Service Mesh



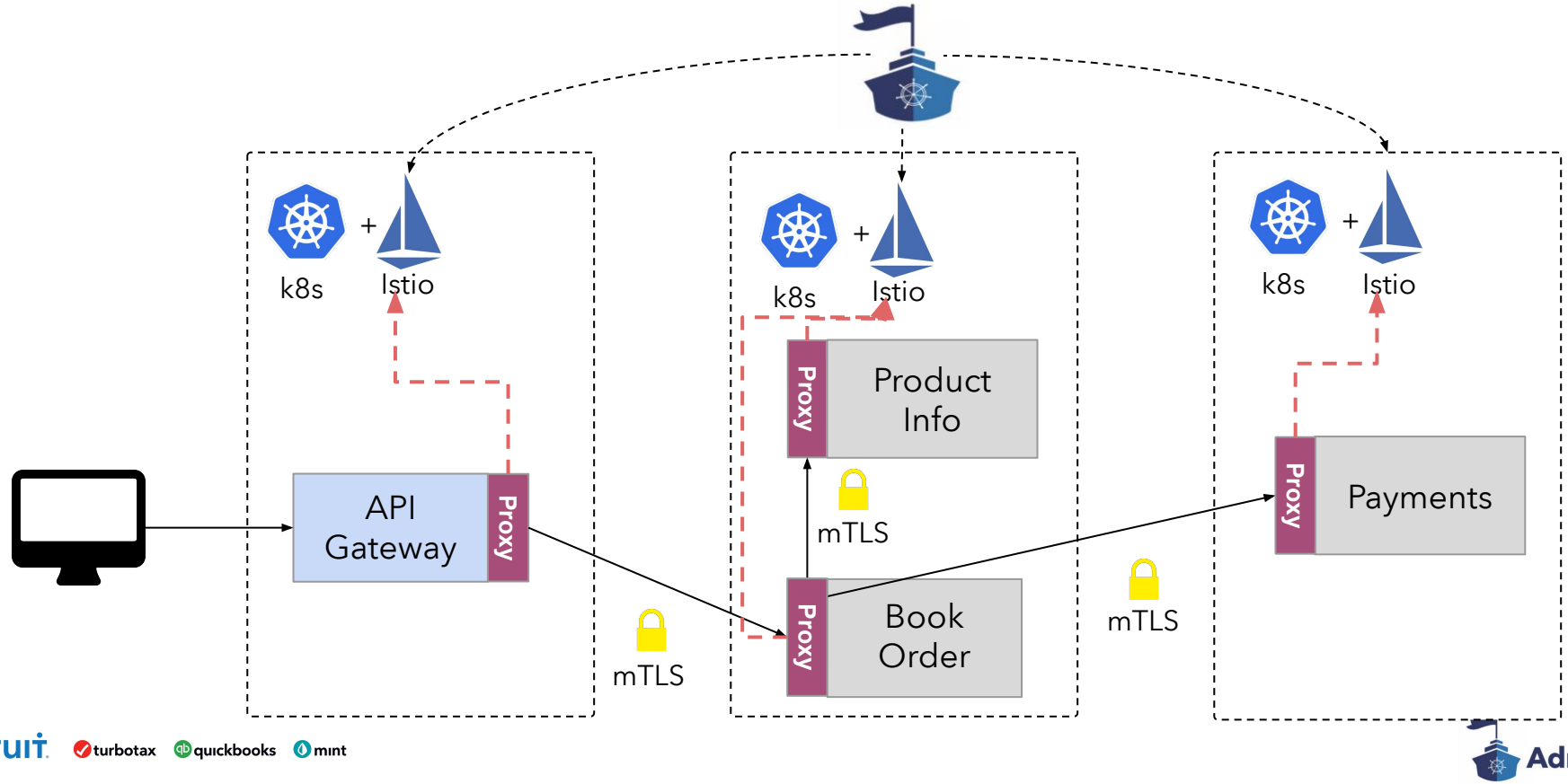
- ✓ Security
- ✓ Visibility
- ✓ Traffic Shaping
- ✓ Latency
- ✓ Single Point of Failure

Adoption Challenges

- Multi-region deployments
- Non-flat networks
- Multi-tenant configuration
- Management of Istio installation
- Self-service mesh enablement for service owners

Demo

Admiral


k8s
Istio
k8s
Istio
k8s
Istio
API Gateway
Proxy
Product Info
Proxy
mTLS
Book Order
Proxy
mTLS
mTLS
Payments
Proxy

Validation Webhooks

- Allow configuration only related to owned namespace
  - Only allow configuration for a “service’s” hostname
- Validated
  - Deployments
  - Virtual Service
  - Service Entry
  - Destination Rule
- Blocked
  - Envoy Filters
  - Gateways

Developer Platform Integration

- Mesh Automation
  - Control Plane Install/Upgrade
  - Admiral cluster registration
- Higher Level Logical Service for Developers
  - Multi-cluster Identity
  - Multi-region Endpoint
  - Istio config integrated with gitops deployment
  - Init modifications to prevent proxy startup race conditions

Thank You

Admiral Istio Ecosystem Project
https://github.com/istio-ecosystem/admiral

Istio Slack
#admiral