

WP17

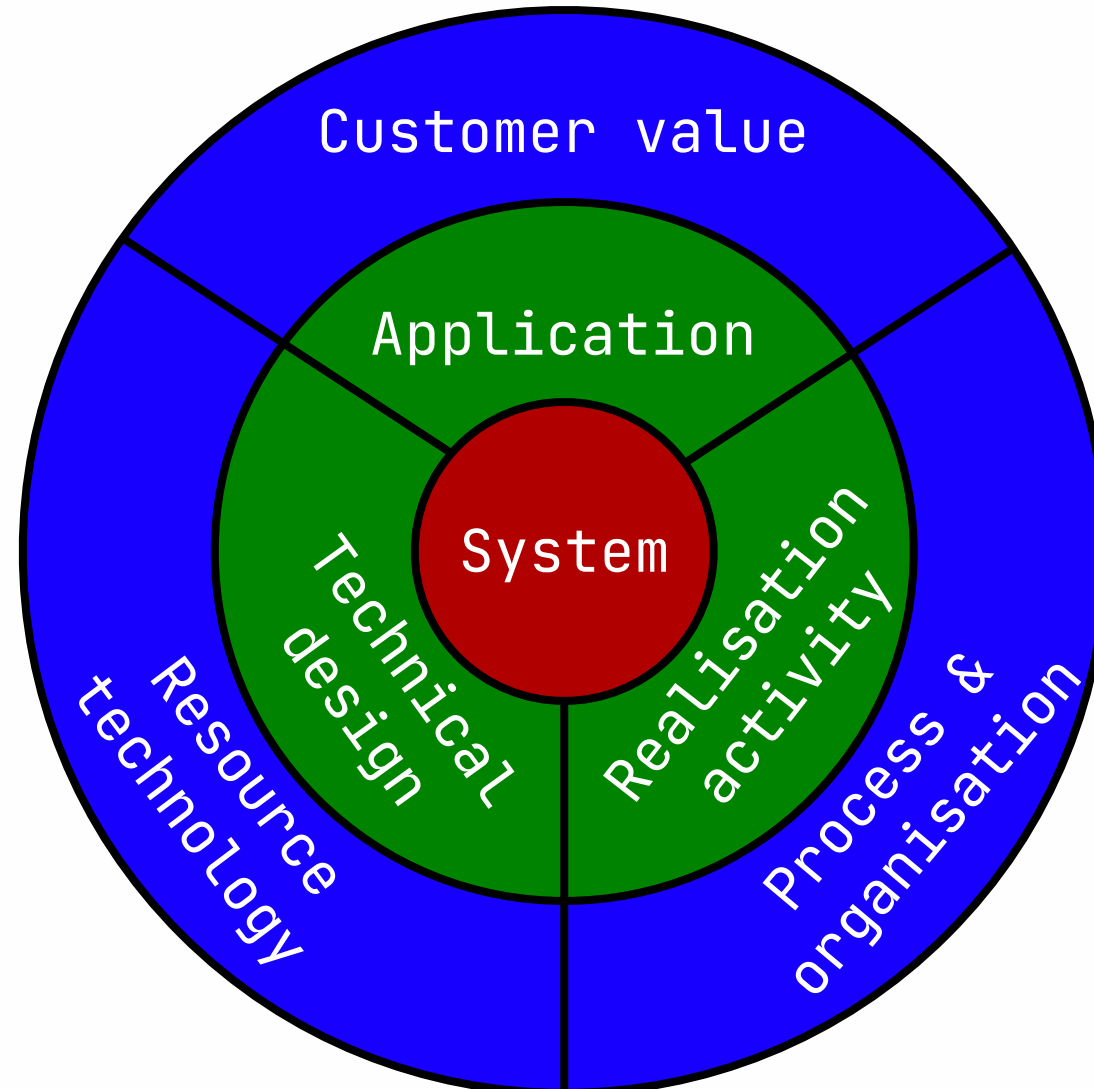
Decomposition

Design of Software Architectures

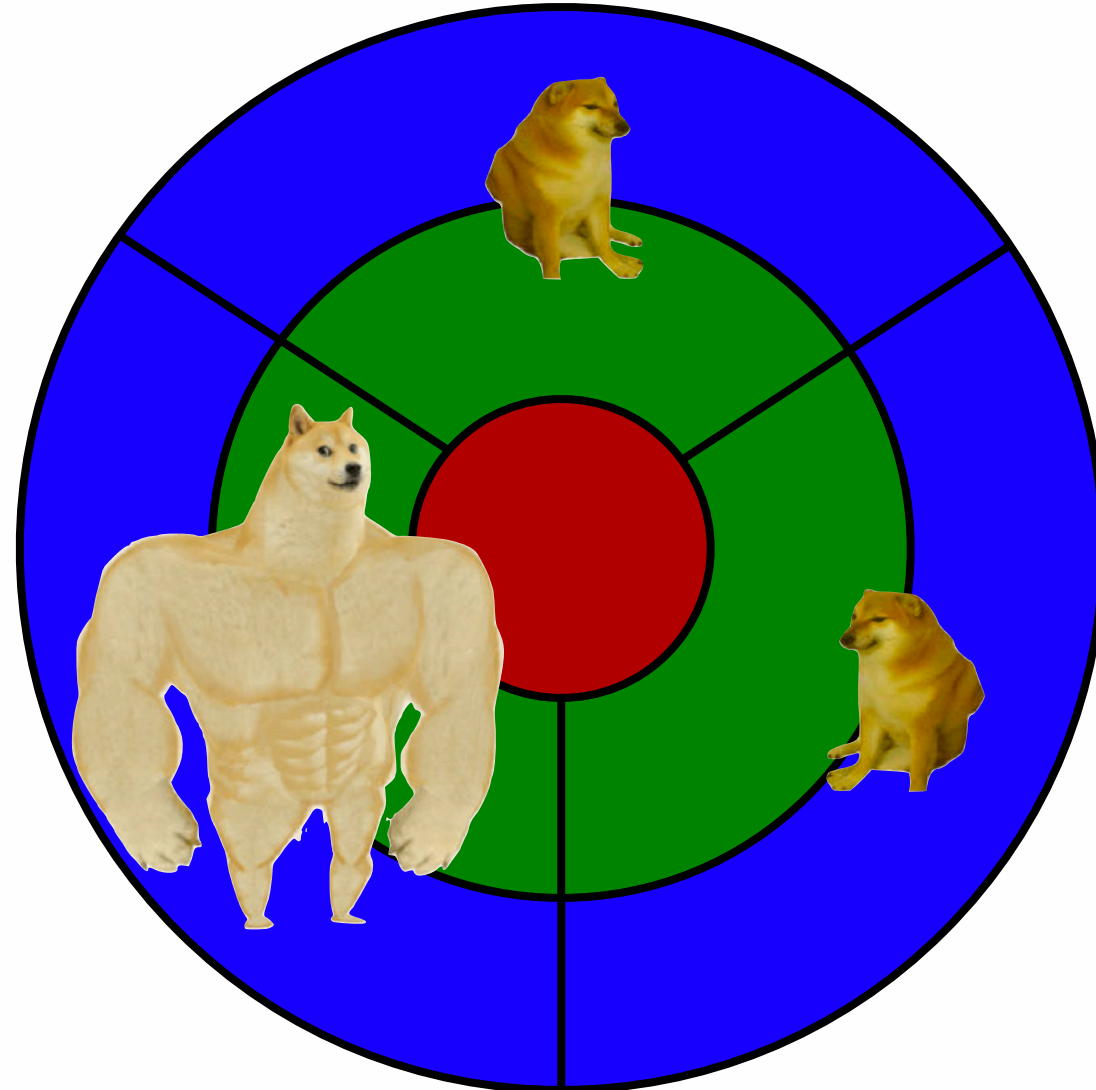
Dr. Vadim Zaytsev aka @grammarware, 13 October 2022



Recall WP03



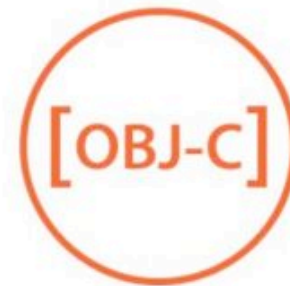
Recall WP03



by Robert Deckers, based on ISO 42010 & DYA



BASH
THE BOURNE-AGAIN SHELL



POWERED BY
Perl



Swift

PL/ITM



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Kony



Xamarin



Adobe AIR



Sencha Touch



PhoneGap



Appcelerator



iOS



Android



Windows



BlackBerry



HTML5



Symbian



Bada



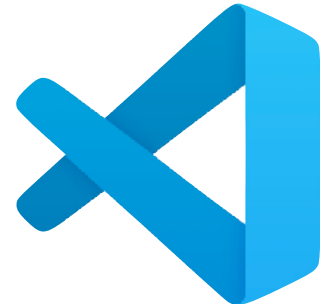
webOS



Mac OS desktops



Tizen





App Definition and Development

Database: KV, V, ...

Streaming & Messaging: cloudevents, NATS, ...

Application Definition & Image Build: HELM, Backstage, Buildpacks.io, KubeVirt, ...

Continuous Integration & Delivery: argo, flux, k8up, ...

Orchestration & Management

Scheduling & Orchestration: Kubernetes, OpenShift, VOLCANO, ...

Coordination & Service Discovery: CoreDNS, etcd, ...

Remote Procedure Call: gRPC, ...

Service Proxy: envoy, contour, ...

API Gateway: ingress-nginx, ...

Service Mesh: LINKERD, Istio, ...

Runtime

Cloud Native Storage: ROOK, CephFS, LONGHORN, ...

Container Runtime: cri-o, containerd, ...

Cloud Native Network: cilium, CNI, ...

Provisioning

Automation & Configuration: KubeEdge, BOSH, ...

Container Registry: Harbor, Dragonfly, ...

Security & Compliance: Open Policy Agent, Falco, In-toto, Kyverno, ...

Key Management: spiffe, SPIRE, ...

Special

Kubernetes Certified Service Provider: ...

Kubernetes Training Partner: ...

Certified CNFs: ...

Platform

Certified Kubernetes - Distribution: AWS, Azure, ...

Certified Kubernetes - Hosted: AWS, Azure, ...

Certified Kubernetes - Installer: AWS, Azure, ...

PaaS/Container Service: ...

Observability and Analysis

Monitoring: Prometheus, Cortex, OpenMetrics, Thanos, ...

Logging

Tracing: ...

Chaos Engineering: ...

Continuous Optimization: ...

Serverless

CNCF Serverless Landscape

Members

CNCF Members

CD Foundation Landscape

CD Foundation Landscape

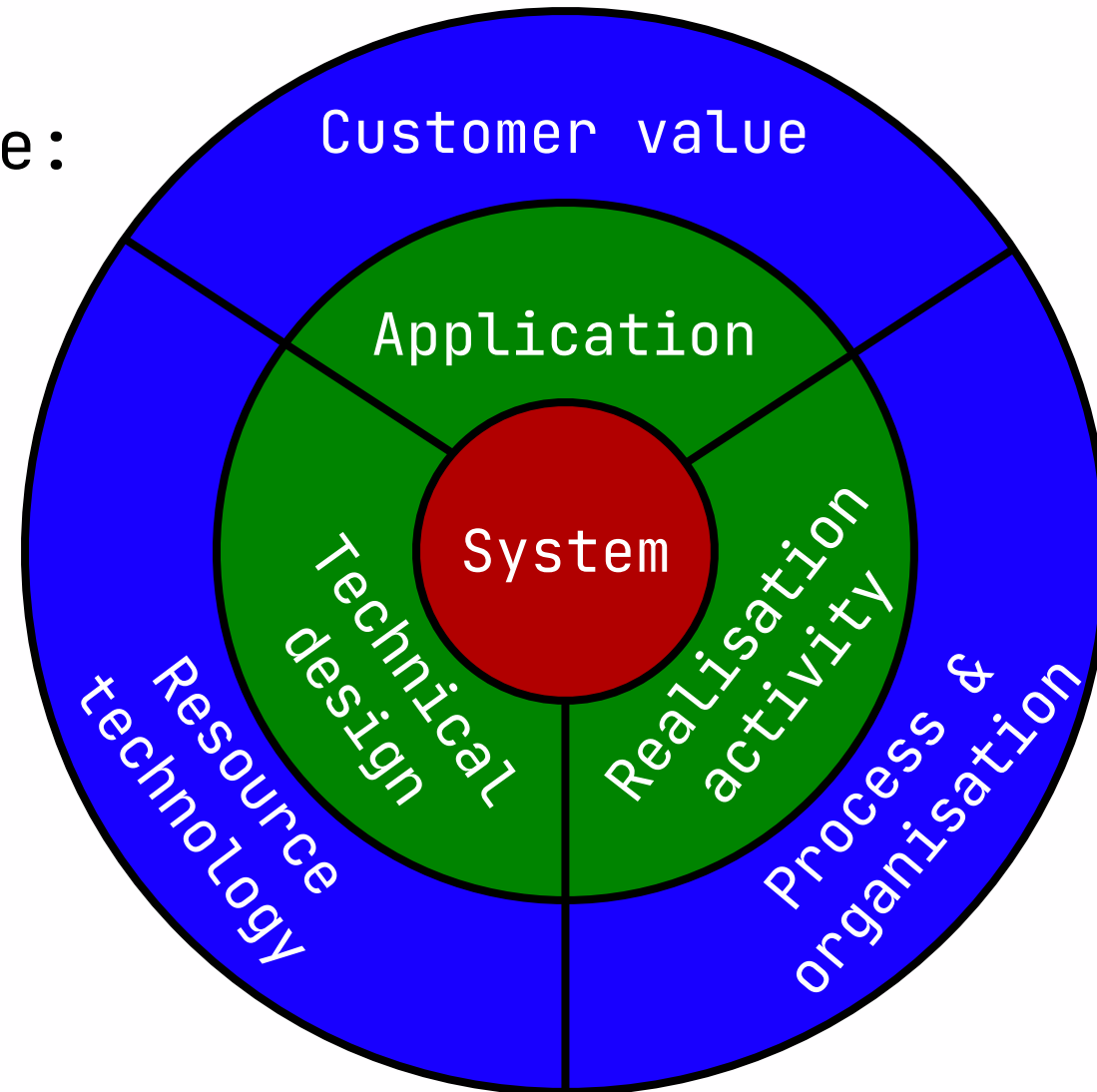
CLOUD NATIVE LANDSCAPE

CNCF Projects

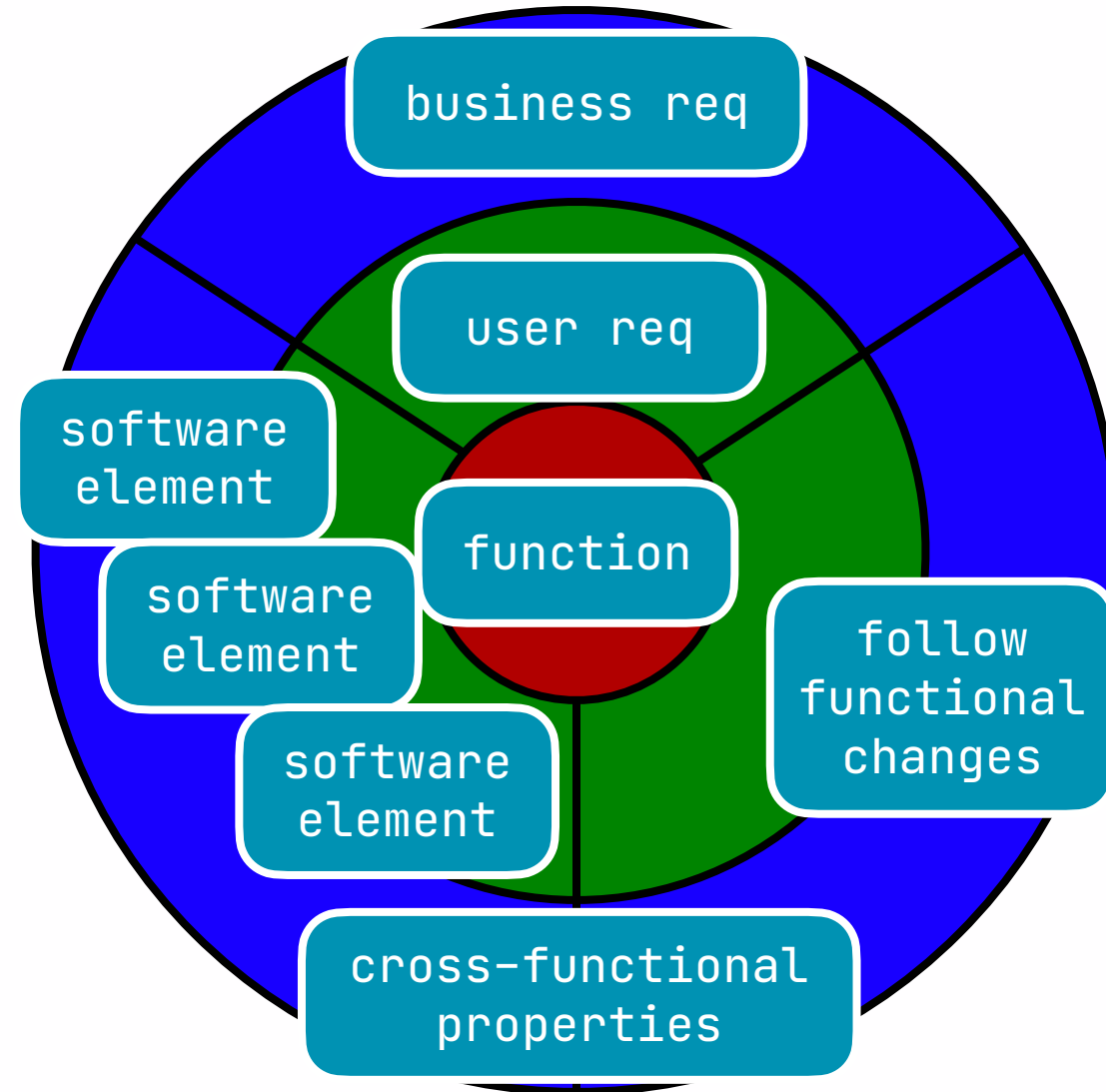
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Dominant decomposition

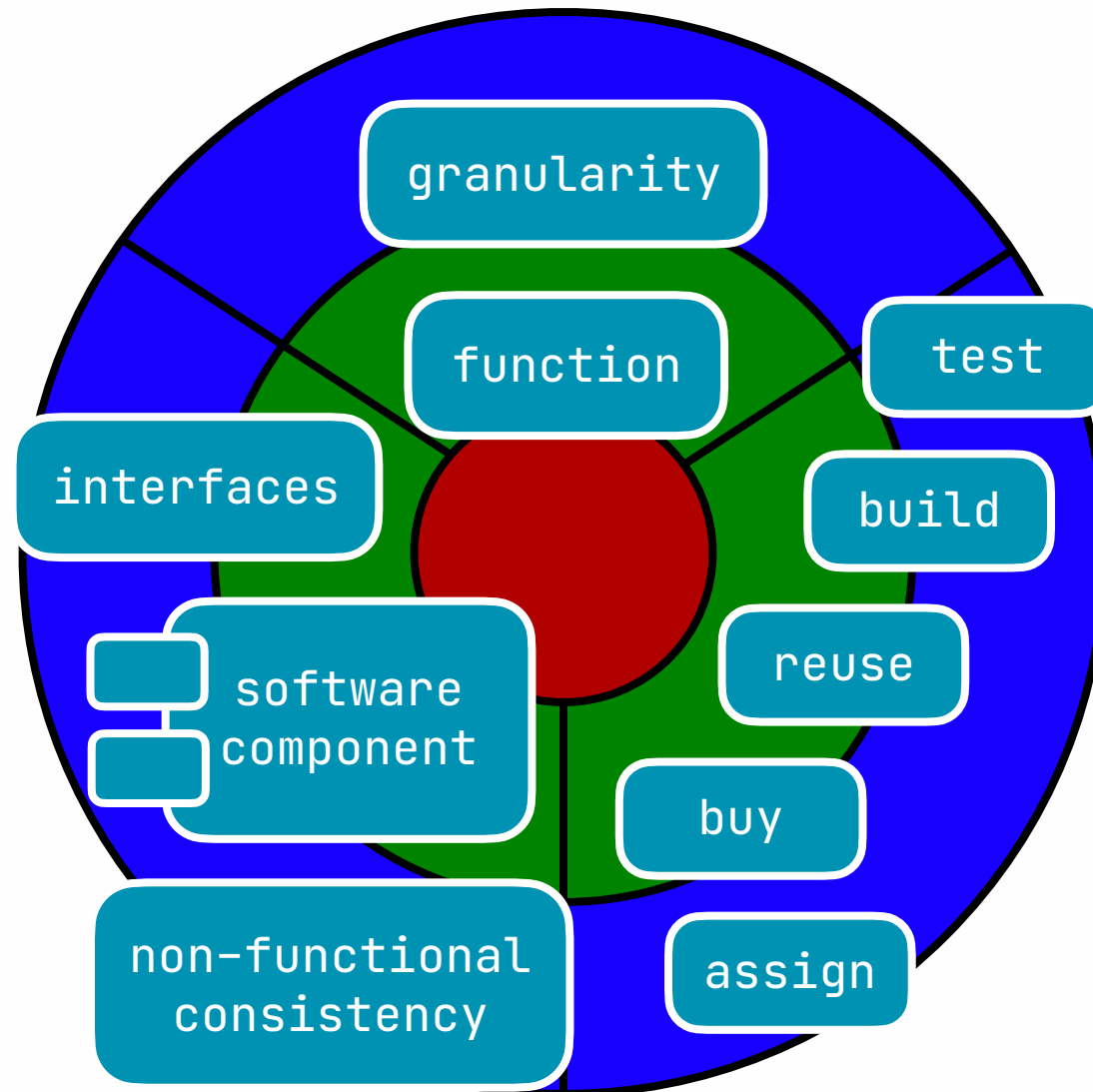
- Elements shaping the architecture:
 - Functions
 - Components
 - Services
 - Guidelines
 - Expertise
 - Frameworks
 - Events
 - Messages
 - States
 - . . .



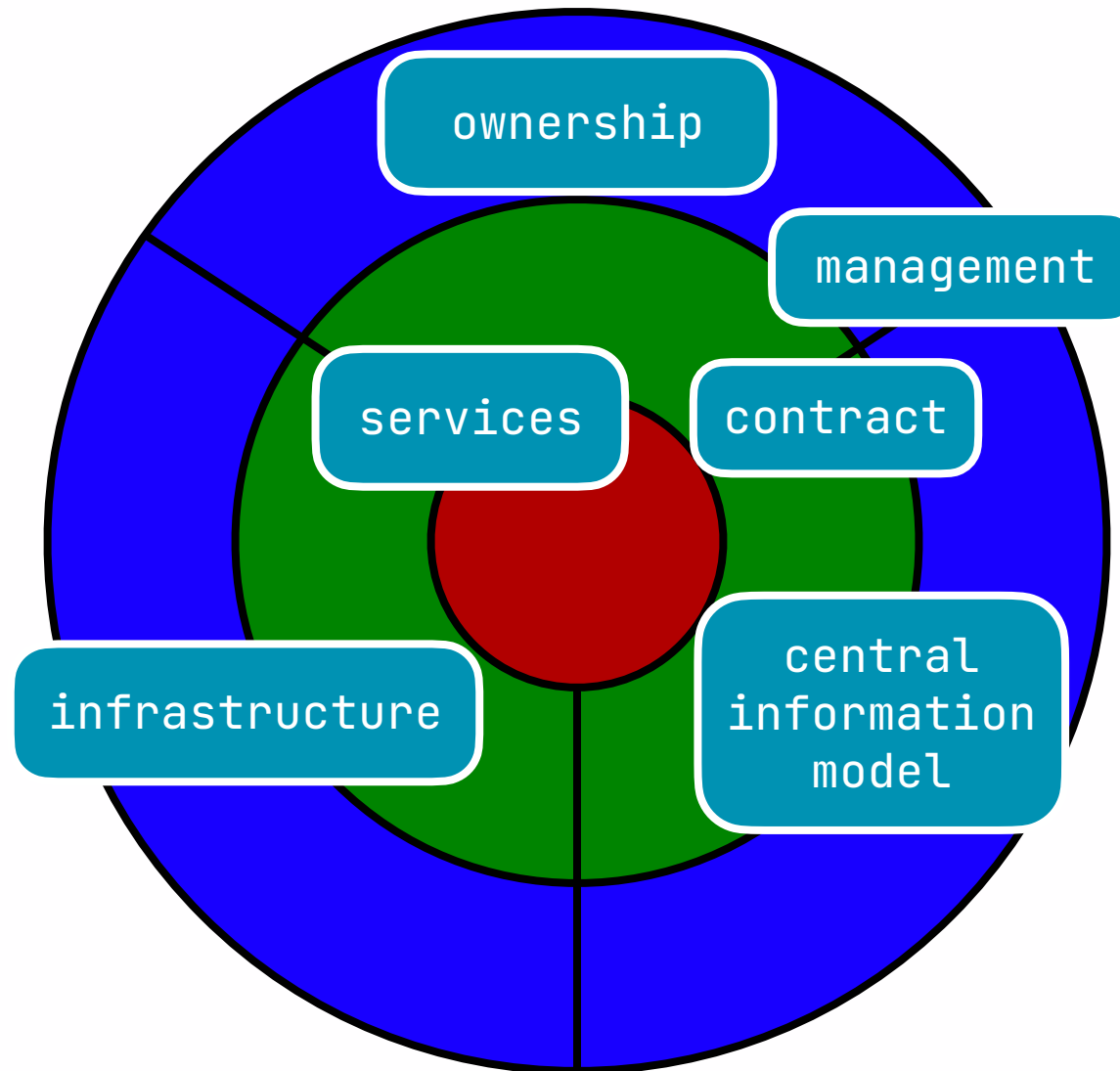
Functional decomposition



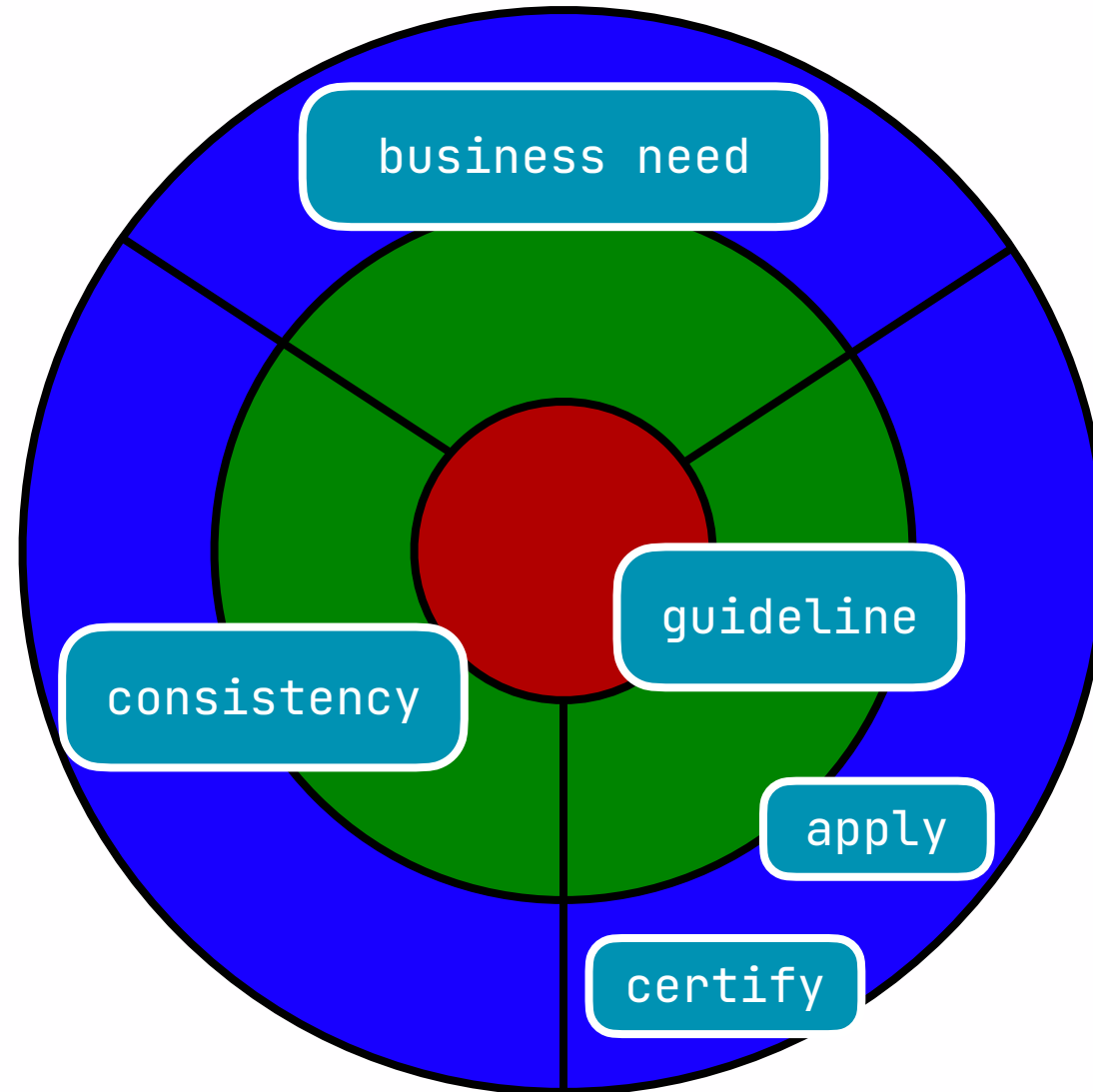
Component-based architecture



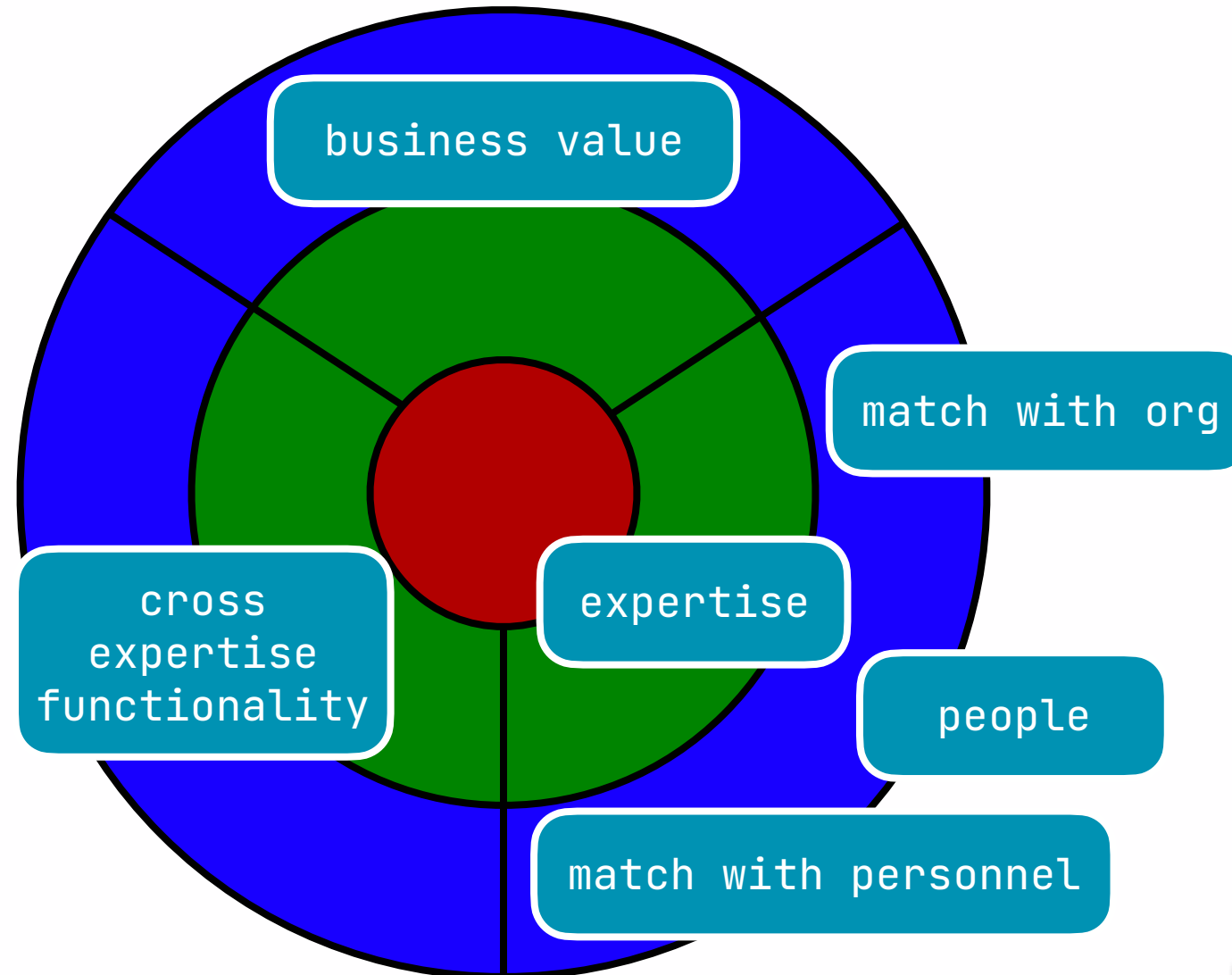
Service-oriented architecture



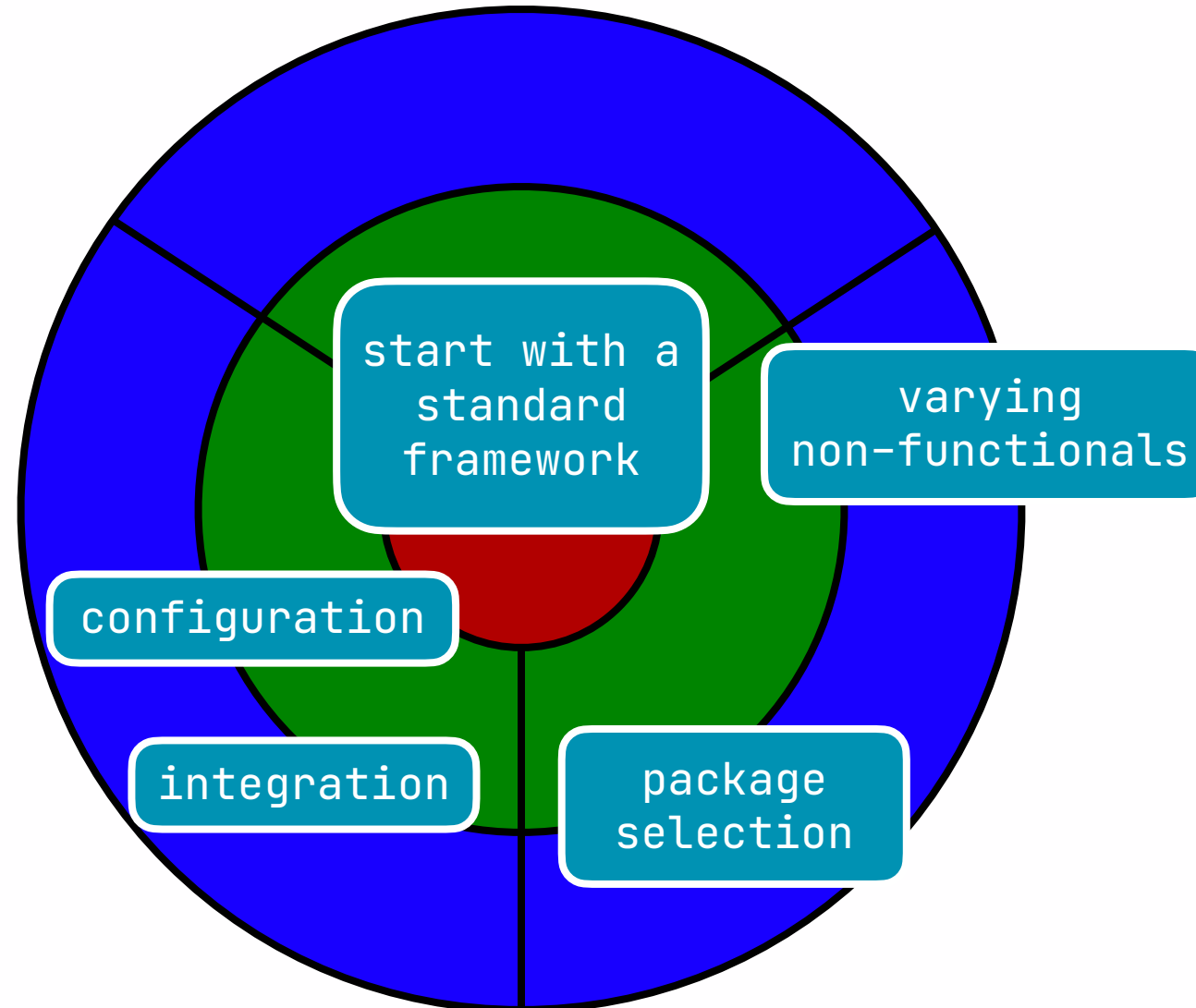
Guidelines



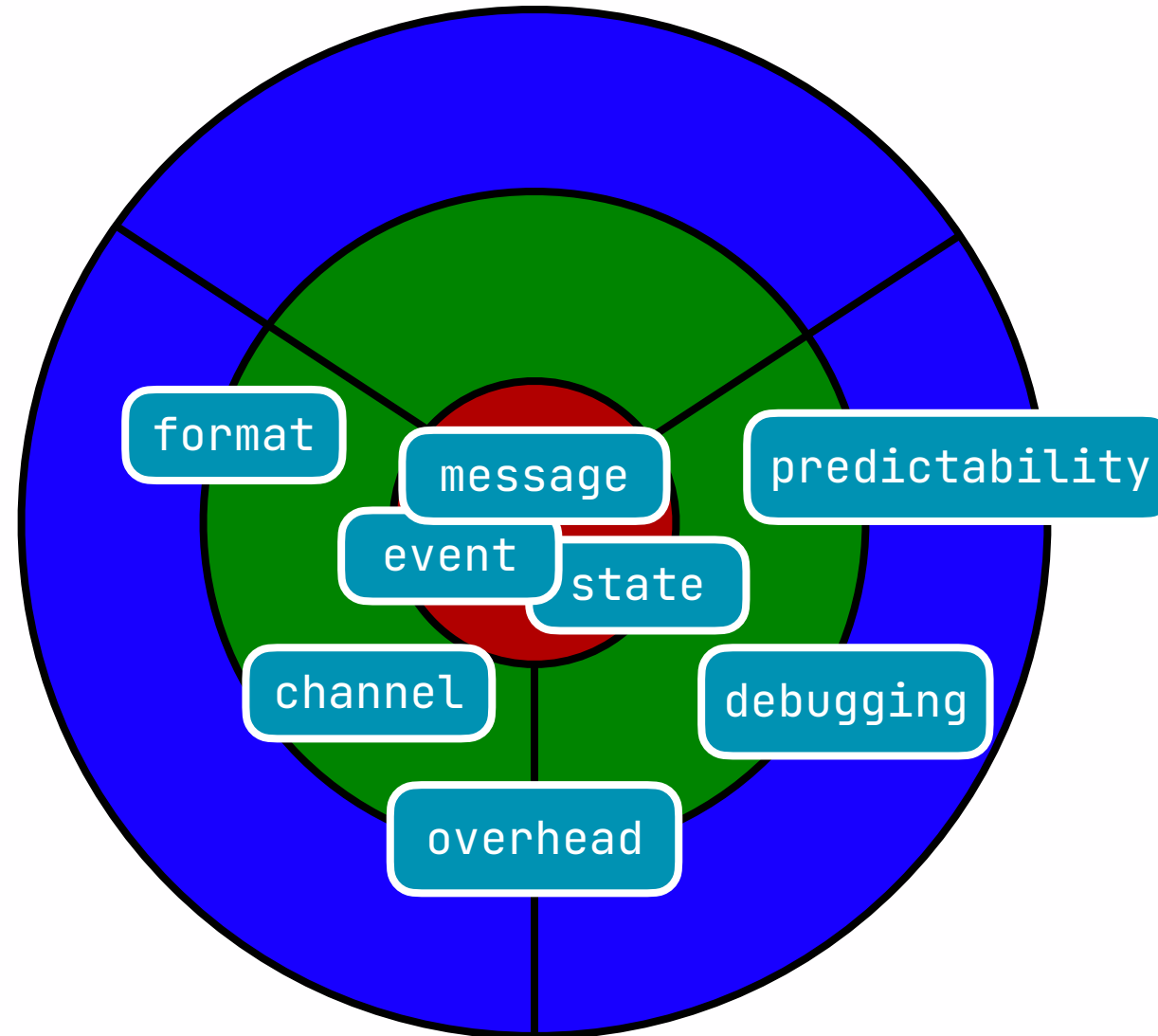
Expertise-centric architecture



Framework-based architecture



Event/message/state-driven arch



Any other architecture styles?

Dominant decomposition

- Choose one style – **dominant**
 - explain how it fits your domain!
- Choose another style – **secondary**
 - how is it related?
- How does it map
 - onto the **structure** of the dev org?
 - onto the **tasks** of team members?
- Which major stakeholder **concerns**:
 - **will** be served by your decomposition? (and why)
 - **will** be **difficult** to address well? (and why)