



# PAUL KNOPF

**dad / engineer**

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## CAREER SUMMARY

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I am a passionate engineer and exceptional problem solver, doing what I love for a living.

I have an intimate understanding of the SDLC, with strong leadership skills that enable me to be effective. I have led and scaled large teams for mission-critical systems, establishing architecture, processes, and best practices to ensure quality and reliability.

With a strong emphasis on simplicity, low ceremony, and an understanding of team capabilities, I ensure that my solutions are built-to-last and move fast based on changing requirements; while also ensuring that even junior engineers can contribute and be effective.

From an individual contributor perspective, my expertise includes a deep understanding of the full stack, encompassing infrastructure provisioning, security/networking, application development, testing, deployment and observability. I'm always learning and keeping up-to-date with the latest technologies and best practices.

I manage a few open-source projects in different languages, including JavaScript, C# and Go.

## SKILLS & TOOLS

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### General

Architecture/Design

Networking

Security

Mentoring/Speaking

Agile/Scrum

## Languages

C#

HTML/CSS

TypeScript/JavaScript/Node

Go

C++/C

Unix Shell Scripts

SQL

Python

## Client-side

React

redux

MobX

webpack/vite

Jest

Sass/LESS

Bootstrap

jQuery

## Mobile

iOS/Android (Xamarin)

xCode

UIKit

Objective-C

## Operating systems

Unix/Linux

OSX

Windows

## Cloud

Terraform

Microsoft Azure

Google Cloud

Kubernetes

Containers (docker/lxc)

Azure Pipelines/GitHub Actions/Jenkins

## Databases

Postgres

MongoDB

SQL Server

SQLite

Cassandra

Lucense/ElasticSearch

# WORK EXPERIENCE

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## Lead Engineer

Ensemble Health Partners

Aug 2022 - Present

- Led several teams/initiatives.
- Established an ecosystem of libraries, frameworks and pipeline templates to enable rapid development/deployment of various workloads (microservices, Azure resources, terraform, etc).
- Rollout of kubernetes clusters, established the process for teams to deploy/maintain/monitor their workloads.
- Design/implementation/rollout of a micro-frontend client-side architecture, enabling teams to develop modules locally and deploy them into a single integrated client-side application.
- Design/implementation/rollout of Temporal for orchestrating workflows, combining new/legacy systems, creating new use-cases.
- Design/implementation/rollout of CQRS pattern, addressed upper performance limits of our current architecture, resulting in dramatic performance improvements, and significant savings through database SKU optimization.
- Regular presentations to the company on new technologies, best practices, and architecture.

## Technologies used:

Architecture .NET Core Microservices Dapper/OrmLite Kubernetes React/TypeScript  
Micro-frontends Temporal Azure DevOps Azure Terraform ElasticSearch Postgres  
Redis

## Technical Lead

Novanta Surgical Imaging

July 2019 - Aug 2022

Managing a team of people on a wide-array of projects across different languages/platforms.

### Some key points:

- Overseen design/implementation of next-generation prescriptive architecture/platform for medical imaging software.
- Protobuf/gRPC microservice architecture with a focus on performance and stability, emphasis on golang.
- Coordination with firmware team to ensure driver/software development feature parity.
- ASP.NET (and .NET Core) React application/MVC APIs, multi-tenancy, on-site deployments with automated updates.
- Established usage of IDesign's "The Method", an approach for system and project design.

## Technologies used:

Architecture .NET ASP.NET MVC Microservices Protobuf/gRPC Docker  
SQLite/MongoDB/Postgres C/C++ Golang JavaScript/TypeScript Cloud (Microsoft Azure)  
CI/CD (Pipelines) Unit Testing

## Senior Software Engineer

Med X Change

Nov 2012 - July 2019

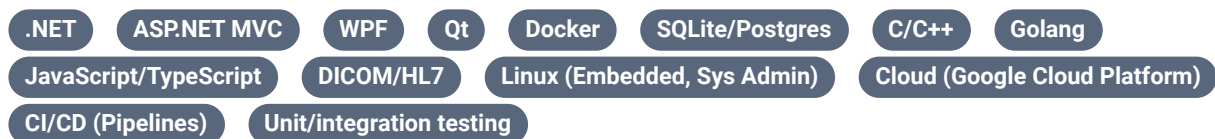
Thought leader for a small team of developers in the embedded and web space.

### Some key points:

- Manage IT infrastructure for software (build agents, on-prem GitLab, etc) and project management.
- Embedded .NET Core runtime in native executable, integration interop with V8.
- iOS/Android application development using the Xamarin platform.

- ASP.NET WebAPIs for consumption in mobile platform.
- DirectShow and gstreamer for encoding/decoding with various video formats, including H264/MP4.
- WPF and Qt/QtQuick implementations of digital recording software on embedded devices.
- C++/C for internal libraries used to connect to record video and connect to hospital networks (DICOM/HL7).
- Custom Embedded Linux distros for embedded devices (Yocto).
  - Brickless update design.
  - Read-only boot with **tmpfs** overlay for stability and resilience.
- Compilation and cross-compilation (vc++, gcc, MAKE, CMAKE, meson, autotools, etc).

#### Technologies used:



## Software Engineer

### MethodFactory

Jun 2011 - Dec 2012

- Managed/maintained production instances of IIS/SQL Server for many high-volume sites (coleman.com, rawlings.com).
- Managed a prescriptive framework written in C# .NET 4.0 used to accelerate and model application development according to industry best practices.
- Managed an internal automated NuGet feed (using TFS Build) for delivering updates.
- Database design and development. Managing indexes/performance. Troubleshooting with SQL Profiler.
- Created a process to managing SQL Server Database Projects (SSDT) so that framework libraries can be distributed with matching .dacpac files for client schema updating/generating. The process also included automated deployments of database schema and projects from TFS builds for Continuous Integration and validation of the build.
- Wrote and managed C# TFS Build Activity that creates and deploys multiple NuGet packages.
- Implemented an enterprise WCF Service Host Factory that uses IoC (Dependency Injection) to resolve contracts for runtime composability.
- Created WCF Services using REST/JSON for use on client side widgets.

- Created an MVC3/jQuery eCommerce UI foundation for eCommerce websites. Delivered to projects in a .zip file delivered by a VirtualPathProvider for easy updating and ensuring stability. Added support for overriding at every level (css/js/view) for client specific adjustments using a MVC ViewEngine and a client-side dependency management framework (Cassette).
- Implemented/created a jQuery plugin in ASP.NET MVC3 to enable extensible keyboard navigation with 100% client-side interaction from the point of entry.
- Designed enterprise N-tier framework to be reused by multiple enterprise clients (Coleman, Nuk, Rawlings).
- Designed/developed software for medical equipment for capturing and recording pictures and videos using MSMQ/NServiceBus/SignalR to send messages between the website and hardware.

#### Technologies used:

.NET

ASP.NET MVC

SQL Server

TFS

Microsoft Test Manager

Microsoft Commerce Server

Windows Server 2008/2012

Microsoft BizTalk

## Freelance Software Engineer

Adept Web Studios

Jun 2009 - June 2011

- Re-wrote nopCommerce from WebForms to ASP.NET MVC. Contributed it back to nopCommerce for the V3+ release.
- Design and develop custom solutions from cms to e-commerce using the appropriate technologies.
- Created a Lucene.NET implementation for faceted searching in eCommerce solutions (nopCommerce).
- Wrote and sold plugins and themes for nopCommerce.
- Wrote a CMS integration for nopCommerce to bring advanced CMS technologies to an eCommerce driven website.

## Software Developer

Dataline Associates

Sep 2009 - Aug 2011

- Managing catalog and orders (25,000 products) using MSMQ to handle product/inventory updates.
- Integration into 3rd party websites for price comparison and analytics.

- Managing web server (Windows Server 2008 R2) and database for high-uptime and high-load.

## PROJECTS

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Qml.Net [github.com/qmlnet/qmlnet](https://github.com/qmlnet/qmlnet)

An integration of .NET and QML for cross platform and high-performance desktop applications. I built a thin C layer with C++ shared pointers to integrate the two garbage collectors (.NET and QML-JavaScript). AppVeyor and Travis CI are configured to ensure a suite of tests pass for each commit on every major platform (Linux/OSX/Windows).

### Technologies used:

C/C++

.NET Core

QT

Continuous Integration

Darch [godarch.com](https://godarch.com)

Think "Dockerfiles", but for immutable, stateless, graphical (or not) environments, booted bare-metal. I use this tool as my daily driver for Linux. Each distribution contains a custom initramfs that overlays a temporary file system over your read-only Darch images. This allows each boot to be a clean boot. Any change made to the runtime (`apt-get install`, etc) are discarded on each boot. Any change you want persisted has to be scripted and baked into your recipes (which is a good thing!).

### Technologies used:

Go

Docker

containerd

Continuous Integration

React ASP.NET Boilerplate [github.com/pauldotknopf/react-aspnet-boilerplate](https://github.com/pauldotknopf/react-aspnet-boilerplate)

A boilerplate project used for a few personal projects of mine. It is a clone of the default ASP.NET template, written in React, that includes login (internal/external) and account management. There aren't many opinions and uses only well-established libraries and patterns. It also includes server-side rendering, allowing ASP.NET MVC controllers to provide the data needed to render each page on the server. After the initial render, client-side routing handles all future navigation. Since the server renders JavaScript, there is no need for Razor anywhere.

### Technologies used:

React

ASP.NET

.NET Core

Entity Framework Core

gulp

webpack

redux

Server-side rendering

## EDUCATION

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### **MCPD/MCTS .NET Web Developer**

MCP ID: 8482776

### **Associates of Liberal Arts and Science**

State College of Florida.

GPA 3.6 2008-2010