



# Vibhor Agarwal

Cloud & AI Architect

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## summary

Vibhor has a rich **23-year** experience in digital transformation, application modernization, portfolio rationalization, business process automation, and product research & development. With over twenty certifications across a full stack of technologies, he is an expert in architecting, designing, and building innovative products and applications. He is known as the point of reference for solutioning complex proposals and navigating adverse situations. He works closely with agile delivery teams to foster positive & personal relationships and excels in building strategic customer partnerships globally.

## work experience

Timeline	Organization	Designation
Jul 2003 - Present	<u>CGI Inc.</u>	Director Consulting (Expert)
Jun 2002 - Jul 2003	<u>Automated Workflow Private Limited</u> (Now - <u>Azentio, Candela Labs</u> )	Development Specialist
Nov 2000 - Feb 2002	<u>Tata Infotech Ltd (TIL)</u> (Now Tata Consultancy Services)	Trainee, Development Engineer

## key assignments

*\*\* for all assignments, please ask for detailed resume*

- Driving AI and Data initiatives for a bearing manufacturer, including Big Data processing / Data Lake on AWS, Azure AI / GenAI based product assistant, 'MS Teams' bot, ML prototypes with AWS Sagemaker, custom model deployments, scientific UI with React
- Digitalization of desktop applications on AWS for a bearing manufacturer, with Python, Lambda APIs, containerization with ECS & other serverless technologies in a custom, secure, cost-effective, high-performance, & scalable architecture
- For a semiconductor manufacturer, built a Java, AWS & Angular based solution that digitalizes NCF payment cards integrating with MDES and VTS. Other assignments included building an OpenID based AuthN & AuthR system with user's digital identity.
- End to end automation & optimization of Content & Services platform for a navigation systems & map provider
- CMS migration (Tridion to Jahia) & enhancement of content portal for a French Facilities Management provider.
- Oracle EBS customization (OAF, PL/SQL) for a US based gas detection company

- Application portfolio rationalization & modernization (Java, MQ, Oracle) for a custom brokerage services provider
- Development of a complex WebLogic portal (SOA, J2EE, Oracle) providing hedge funds services for a large bank

## skill snapshot

<b>Core languages/frameworks</b>	Python, Java, Ruby on Rails, PL/SQL, Microservices
<b>Front End</b>	React, Angular, jQuery, Ext JS, Oracle OAF, JSP, JPF
<b>Cloud</b>	AWS, Oracle Cloud Infrastructure, Google Cloud, Azure, Cloud Foundry
<b>AI &amp; ML</b>	Big Data processing, RAG, AI with public Cloud, OpenAI, Machine Learning/ Models (with AWS Sagemaker), Microsoft Teams Bot
<b>Middleware</b>	Redis, Rabbit MQ, IBM MQ, Tibco, WebSphere CI
<b>IaC</b>	Serverless, AWS CDK, Terraform, Azure Bicep
<b>QA</b>	Pytest, Locust, JMeter, Selenium, BDD, Ranorex, Rest Assured
<b>DevSecOps</b>	Jenkins, Azure DevOps, Veracode, Coverity, Black Duck, AppDynamics, SonarQube, Kubernetes, Docker, GitHub Actions
<b>CMS</b>	Jahia, Tridion, Liferay, WordPress
<b>Data, BI</b>	Oracle, PostgreSQL, MySQL, NoSQL, Grafana, Hadoop, BigQuery
<b>Exposure to</b>	ELK, Kafka, Service Mesh, TensorFlow, PyTorch, Azure Data Factory, Databricks, PySpark, Snowflake, IoT

## certifications

- AWS Certified AI Practitioner
- AWS Certified Solutions Architect – Associate
- Microsoft Certified Azure AI Fundamentals
- Microsoft Certified Azure Data Fundamentals
- Google Cloud Skills
- Oracle Cloud Infrastructure 2024 Generative AI Certified Professional
- Oracle Cloud Infrastructure 2023 Certified Multi Cloud Architect Associate
- Oracle Cloud Infrastructure 2024 Certified Foundations Associate
- AI for Organizational Leaders by Microsoft and LinkedIn
- Career Essentials in GitHub Professional Certificate
- Certified SAFe® 5 Practitioner
- Oracle Cloud Data Management 2023 Certified Foundations Associate
- AWS Partner: Accreditations
- Neo4J Certified Professional
- Microsoft Certified Azure Fundamentals
- HashiCorp Certified: Terraform Associate
- Google Cloud Certified Cloud Digital Leader
- Oracle Cloud Infrastructure 2023 AI Certified Foundations Associate
- Oracle Cloud Infrastructure 2021 Certified Architect Associate
- Aviatrix Certified Multi-Cloud Networking Associate
- Career Essentials in Generative AI by Microsoft and LinkedIn
- Build Your Generative AI Productivity Skills with Microsoft and LinkedIn
- Certified SAFe 5 Agilist
- Python for Data Science

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## trainings, publications

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- Blogs/Papers:
  - <https://techvibhor.link>
  - [https://dev.to/vibhor\\_agarwal](https://dev.to/vibhor_agarwal)
  - <https://stackoverflow.com/collectives/aws/articles>
- Tech Community
  - <https://stackoverflow.com/users/7746398/techfree>
  - <https://github.com/vibhoragarwal>
- Training – Kubernetes Administrator (CKAD), GCP, WebLogic, MongoDB, Intershop, Talend, Liferay, Jahia, Angular, Agile, Data Science, Design Thinking
- Industry Experience – Manufacturing, Banking, Telecom, Retail & Consumer Services, Product Development, Digital Payment

## education

- BE, MBA
- Secondary & Higher (CBSE)

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## all assignments

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### **AI & Data Enablement** | Bearing manufacturer | Dec 2023 – till date | Cloud & AI Architect, DevSecOps

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For a large bearing manufacturer, initiatives include implementing custom Big Data processing & building data lake for product optimization, integrating microservices services using advanced LLM capabilities, building Knowledge Retrieval system on Azure, Teams Bot and experimenting with ML on cloud & few other custom model deployments.

*Technical Environment:* Python, LangChain, Data Science, React, Azure OpenAI (GPT 3.5, 4o), Azure (AI Search, Blob, Function Apps, Cosmos DB, Web App & Bot Service), AWS (ECS, Athena, Lambda, Layers, Step Functions, S3, DynamoDB, Sagemaker, Cohere), AWS CDK, Serverless, Git Hub Actions.

### **Digitalization as a Toolbox** | Bearing manufacturer | July 2020 – Dec 2023 | Cloud Architect, DevSecOps

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For a large bearing manufacturer, the project involves migrating proprietary calculation applications, desktop tools & supporting services developed in C, C++ & Java to cloud based services. The scope includes building front end APIs, hosting containerized applications on ECS & Lambda and ensuring a secure, cost optimized, high-performance, fast auto-scaling & robust architecture. Key features include custom ECS auto scaling solution, decoupling models onto the cloud, integrating build pipelines of desktop tools into service pipelines, supporting multiple versions and providing, and building turnkey modelling support.

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*Technical Environment:* Python, Locust, AWS, AWS CDK, Serverless, Jenkins, Azure DevOps, Customer proprietary software

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**CMS with Adobe Experience Manager (AEM)** | Light manufacturer | July 2022 – Aug 2022 | CMS Consultant

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Leverage past CMS experience to review deliveries at high level for a large Dutch lighting corporation that requires enhancement and development of AEM based front end applications.

*Technical Environment:* Adobe AEM, Java, Vue.js, Typescript

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**BI Reporting Optimization** | Industrial automation company | Apr 2020 – Jul 2020 | BI Consultant

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For a US based industrial automation company, the existing BI & Reporting set-up was assessed in terms of streamlining reporting, identifying accurate data sets, consolidating reports, migrating to latest reporting technology, and building a centralized data repository.

*Technical Environment:* IFS ERP, Oracle, Crystal Reports

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**FRS Mobile Infrastructure** | Elevator manufacturer | Mar 2020 – Apr 2020 | Architect, System Configurator, Consultant

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For a large US based elevator manufacturer, the infrastructure solution involved implementing a suite of software components including Akamai for WAF and F5 for load balancing access to back-end application servers via proxy servers to achieve a multi-tier architecture. Additionally, the solution required end-to-end SSL pass-through to support client certificate based mutual authentication on their existing back-end application servers.

*Technical Environment:* Akamai, RHEL, F5, HTTPD, HA Proxy/ Nginx, CGI DC

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**Digital Payment** | Semiconductor manufacturer | Jun 2018 – Feb 2020 | Architect, Lead Developer

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An end-to-end solution integrating several advanced technologies with comprehensive software / hardware integration support, to offer OEMs a pre-certified and validated turnkey solution, that included a wallet application and SDK, wallet server integrated with MDES & VTS tokenization platforms, SEMS (Secure Element Management Service Aka Loader Service), NFC and SE module, NFC middleware, SE Java Card™ OS, and the required SE applets. In other words, the platform is an enabler for users, to digitize their payment card onto their phones, wearable or any IoT device. The extended scope included building a state of art simulation product in the digital payment domain, overriding yet fulfilling critical system dependencies.

*Technical Environment:* Java, Spring Boot RESTful services, JPA / Querydsl, OAUTH/OpenID, Gluu, Redis, HSM, PostgreSQL, Docker, Maven, ELK, Mockito, Firebase, Android, iOS, Rest Assured, JSP, Angular 7 with Material Design, Bit bucket, JIRA, Bamboo, Coverity, Black Duck, Confluence, AppDynamics, AWS, Customer DC

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**IoT Hub** | Semiconductor manufacturer | Aug 2018 – Sep 2018 | Back End Architect, Consultant

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This assignment involved developing a platform for partners who create their own IoT systems. The platform enables the provisioning of certificates, keys, and services on devices, as well as the management of device associations and state transitions. The scope of work included the preliminary design and the construction of a prototype.

*Technical Environment:* Spring Boot Micro Services, SE, Proprietary Middleware, Android, Customer DC

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**Productization of PA Services** | Semiconductor manufacturer | May 2017 – Jul 2018 | Consultant, Architect

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Product Authorization Services (PAS) is a .NET-based platform that enables end users to use their NFC-enabled phones to tap on products with embedded NFC tags, allowing them to view product content on their mobile browsers. The scope of work included security and performance testing, hosting the redirection component and the admin portal on AWS, implementing several system enhancements, and providing ongoing application and infrastructure support.

*Technical Environment:* ASP.NET MVC, ASP.NET Web API 2, MSSQL, REST APIs, Dapper ORM, NuGet Package Manager, NUnit 3, Visual Studio 2012 with C# compiler, OAUTH2 for user authentication, HSM (UTIMACO SE 1500, UTIMACO SE1000), Node.js, Bower, GULP, Selenium Web Driver, AWS

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**Digital Identity & Access Management** | Semiconductor manufacturer | Sep 2017 – Apr 2018 | Sr. Architect, Lead Dev

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This product is a comprehensive mobile service-based solution that connects Relying Parties and Identity Providers, enabling end users to authenticate on Relying Party apps and applications using their original digital identity (such as travel documents, driver's licenses, passports, and other root electronic documents) or its derived identity. The authentication token, in the form of a JWT, contains claims extracted from the card or chip, facilitating authorization decisions for Relying Parties. For end customers, both public and private service providers benefit from a secure OpenID-based back-end system that offers online identity, authentication, and signature solutions to citizens. The scope of work included building a prototype for business with major use cases that can be presented to government agencies across Europe.

*Technical Environment:* Java 8, Spring Boot 2 RESTful micro services, Gradle, EJBCA, Web Socket, Cloud Foundry UAA, Redis, Rabbit MQ, Docker, Vagrant, PostgreSQL, ELK, jQuery, Mockito, Android, iOS, Appium, Soap UI, GIT, JIRA, Bamboo, Confluence, AWS with Dockers, Customer DC

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**AppXplorer Productization** | Semiconductor manufacturer | Dec 2016 – Mar 2018 | Sr. Architect, DevOps consultant

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A smart city product, the platform is an '*ecosystem of cloud and NFC mobile services, designed to manage the content of smart cards with end users*'. A special chip within the smart card, with its inbuilt security features, can be leveraged for multitude of use cases. This platform also provides a web portal to on-board and link application providers and card issuers, along with card & application metadata creation. The backend component of the platform talks to android application to read the card status, install/delete applications on the card, via an android application acting as card interface and also as a proxy for card commands (APDUs). The scope includes product and platform performance and security testing and hosting on a public cloud, with BAU setup.

*Technical Environment:* Java 8, Guice, Angular 6, Material Design, Web Socket, Node.js, Tomcat, MS SQL Server, Mifare SDK APIs (proprietary), JAX RS REST, Hibernate, Liquibase, Google Prototype Buffer, Bit bucket, Bamboo.

*Hosting Environment:* Azure (legacy), AWS (with Cloud HSM, Direct Connect, RDS, Classic and Application Load Balancers, Auto scaling, EC2, Code Pipeline, S3, and SDK), JMeter, Commercial Penetration Test tools

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**Quality of Life** | French food services & facilities mgmt. | July 2017 – Oct 2017 | Consultant

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QOL is a multi-segment consumer facing web application integrating access to functions such as concierge, menu's & nutrition, facility management. Scope of work involves feasibility analysis for - Azure migration & building QOL mobile app leveraging existing back end QOL web application.

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*Technical Environment:* ReactJS, Node.js, Cloud AMQP, Redis, Seneca, Auth0, IBM Maximo, Customer APIs – Byte & Concierge, Oracle, AWS Heroku, S3

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**WordPress Migration to Azure from AWS** | French food services & facilities mgmt. | July 2017 – Sep 2017 | Consultant

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Mindful & InMyKitchen are word press sites hosted on AWS infrastructure. The migration is from AWS to Azure.

*Technical Environment:* LAMP, WordPress (PHP), Apache HTTP Server, AWS, Azure, Customer DC

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**Content & Services Transformation** | Dutch satellite navigation devices | July 2020 – Present | Sr. Architect

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The project was about transforming delivery of Content & Services for the navigation devices, for a global leader in navigation, traffic and map products, GPS sport watches and fleet management solutions.

The two agile teams (MapShop and NPI) working in tandem were responsible for content releases for maps, introduction of new devices, speed camera products, promotions etc., along with maintenance of the complete streams. Scope included improving & optimizing the content release delivery cycle (target quarterly bulk maps release cycle to monthly), automating all manual tasks close to 100%, improving release cycle time, and process streamlining along with multiple enhancements to optimize key business processes.

*Technical Environment:* Java 1.7, Ruby 1.8, Web Services (RESTful), Spring, Spring Security, Intershop Ecommerce 7, Tridion 2010/2013, Maven, Linux, MySQL, Ranorex for device test automation, Tomcat, Apache HTTP Server, JIRA Agile, Eclipse, Jenkins, Windows Scripting, Stash, GWT desktop apps.

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**CMS Migration for EPS** | French food services & facilities mgmt.. | Jan 2015 – Dec 2015 | Sr. Developer, Architect, QA

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EntegraPS was built on CMS - Tridion 11, provided content about procurement services for multi-unit clients. The project involved revamping & re-engineering the portal, functionally as well visually, leveraging a new open-source CMS / a web application development tool - Jahia. Several new components were developed for editors and a new site was built, using a brand-new responsive UI, and included features such as 'You May.', Tag Cloud, Blog, Feedback. The core content was migrated from Tridion. Scope included automation of Jahia pages using Selenium Web Driver.

As a corporate strategy, the second aspect of the project was SSO integration of the tomcat applications, including Jahia based web application using .NET SOAP authentication and authorization services with custom IDP using SAML.

*Technical Environment:* Java 1.7, Ruby 1.8, Web Services (RESTful), Spring, Spring Security, Intershop Ecommerce 7, Tridion 2010/2013, Maven, Linux, MySQL, Ranorex, Tomcat, Apache HTTP Server, JIRA Agile, Eclipse, Jenkins, Windows Scripting, Stash, GWT desktop apps.

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**Oracle EBS Customization** | Gas detection products & PPE manufacturer | Oct 2014 – Dec 2014 | Developer, trainer

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A leading US based gas detection company, develops, manufactures, and services fixed and portable gas detection equipment. The business leverages Oracle E-Business Suite, 12.1.3.

The assignment involved customizing and enhancing several out-of-the-box (OOTB) modules, including the Bill of Materials (BOM), Supplier MDM Workflow, and Supplier Registration. Additionally, a customized workflow dashboard was developed

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using - Oracle Applications Framework (OAF) for the front end, PL/SQL, and integration with standard product APIs.

*Technical Environment:* Java 1.6, Oracle OAF 12.1.3, JDeveloper 10.1.3.3.0, Oracle Database 11.2.0.3.0, Oracle Application Server 10.1.3.5.0, Linux 2.6.32

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**Nimbus 360, Inhouse Cloud Product** | CGI Inc. | Jul 2014 – Oct 2014 | Sr. Developer, Architect

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The product is part of the CGI IP **Unify360** suite, which offers a unified IT platform, consulting services, frameworks, and practices essential for understanding an organization's entire IT portfolio. It helps create cohesive strategies that align IT with business objectives, thereby maximizing IT investments. As part of the Nimbus 360 initiative, generic SaaS RESTful web services such as caching, storage, authentication, and security were developed to facilitate application migration to an open-source cloud infrastructure (PaaS). The project was executed in an agile manner, with components being built and tested with selected clients in their beta versions for early feedback, and then subsequently enhanced iteratively

*Technical Environment:* Java (1.6), Apache CXF 3, Eclipse JDT (plugins), Apache Tomcat 7, Redis, Jasper Reports 5, JOSS, Log Stash, Maven 3, SVN

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**Portfolio Rationalization** | Custom brokerage services provider (NA) | Oct 2012 – May 2014 | Architect, Tech Lead, Sr. Dev

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'Trade Sphere' is a global trade management software & a suite of applications that simplifies compliance, integrates into ERP systems & service providers (such as Importer, Exporter, Restricted Party Screening, Solicitation Tracker, Regional Customs Manager). The software applications were running on a mix of dedicated and shared application instances with multiple, overlapping, and duplicated code versions, redundant application servers, middleware and databases - in terms of both technology stack and business functions.

The scope of this project called *Simplification* was to standardize, streamline and rationalize all applications on a single & upgraded version of code base & involved extensive application merging and redundancy decommissioning by introducing multi-tenancy, optimizing middle-ware transaction processing as well as update to the latest version of supported application software, databases & other application components. The SOW included migration of existing applications from Windows to Linux (on CGI DC with minor architectural changes), from Web Sphere X to Tomcat 7, along with technological upgrades such as upgrades to JDK 1.7, IE9 compatibility and Oracle 11g upgrades & multiple iterative optimizations. Additionally, critical components were later deployed on public cloud as a POC, in a managed services model, to be able to leverage cloud features.

*Technical Environment:* Java 1.7, IBM MQ, Apache HTTP Web Server 2.2, Apache Tomcat 7, SmarteLink (Customer Proprietary framework) with web services, Crystal Reports 10, Linux, AWS (POC), Oracle 11g, XML, Hudson (Build and Deployment), Maven 3, SQL, JSP/HTML, Crystal Reports 10, Java Script, and SVN.

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**GlobalPrime Web Portal** | German multinational investment bank | Feb 2005 – Sep 2012 | Sr. Developer, Tech Lead

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This foreign exchange prime brokerage & clearing post-trade web portal was used by hedge funds and institutional investors, primarily based out of US, UK & Asia. The project scope included migrating to BEA's Web Logic Portal 10.3, implementing SOA, customizing & personalizing UX with new look & feel, tracking user behaviour, and ensuring compatibility with IE 7/8/9 and Firefox. Additionally, it involved building Jasper reports, implementing Ajax/Flex, back end



developing & optimizing back-end & client services.

The primary module, Reporting (UI for data warehouse reports) was transformed to use FLEX, with optimized stored procedures and report generation using Jasper. The new framework facilitated the integration of federated content from other parts of the bank and external contributors, and enabled the creation of specific silo sites for a broader, blended audience.

[https://corporates.db.com/files/documents/DB\\_FX\\_Prime\\_Brokerage-Global-Prime.pdf](https://corporates.db.com/files/documents/DB_FX_Prime_Brokerage-Global-Prime.pdf)

*Technical Environment:* Web Logic Portal, Portal RESTful APIs, J2EE, Web Services – SOAP, Hessian, REST, Java Mail, XML, JMS, Java Page Flow, Spring, Hibernate, Lucene, Jasper Reports 5, AJAX using Ext JS, Tibco GI, Flex, Java Script, SOA, Jakarta-Commons projects, Cruise Control/Hudson, Maven, Ant, Log4j, Oracle 10g with TOAD, Sybase, Windows and UNIX, Web Logic 8.1+, 9.2 and 10 as Application and Portal server, Eclipse/Web Logic workshop, Liferay Portal 6 analysis - Entitlements POC, JIRA, Collabnet Tracking System, CVS, SVN, QTP.

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**Virtual Web Store Modernization** | Canadian telecom giant | May 2004 – Jun 2005 | Sr. Developer, Tester

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The project involved modernization and re-engineering of an existing virtual store with WL 8.1 commerce server APIs. This included deploying a brand-new virtual store, on a brand-new infrastructure. The application framework and the new architecture was based primarily on a new presentation layer built on top of Web logic Page flows, a generic portal framework and a new optimized & expanded validation framework.

*Technical Environment:* Web logic 8.1, Oracle 8, TOAD, Eclipse, IE, Netscape 7 and Mercury Test Director.

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**Banking Teller App Migration** | Canadian multinational bank | Aug 2003 – Apr 2004 | Sr. Developer, Tester

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This assignment was a conversion project from C++ to Java, for a retail banking application called S3 - a front-end transaction-processing system. Though the application was not a complete transaction processor but provided a desktop-based user interface and supporting functions for transactions that were, for the most part, processed elsewhere. Transformation included features such as local processing and introducing an improved user interface, which would lead to productivity improvement by more than 50%, by accommodating features such local journaling, querying capabilities, and facilitating stand-in processing.

*Technical Environment:* Core Java, Java Swings, JTest, C++

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**IDMR** | Temasek Polytechnic | Jul 2002 – Jul 2003 | Developer, Tester

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The Integrated Digital Media Repository, IDMR was based on distributed architecture comprised of multiple content repositories, primary being IBM Content Manager. IBM EIP (with IBM WAS) was used for web enablement of IBM Content Manager. IBM Video Charger maintained audio/video digital media and streamed these objects to users over web interface.

Features such as administration, uploading, searching and retrieval of documents & other media objects could be done via a customized web interface. Indexing and quality checking workflow was built on the web so that only selected files can be uploaded. Other prominent features of the system included SSO to other content repositories of the organization, tree structure of result list which could be zoomed, audit trail of the system transaction workflow, digital watermarking, and workflow for uploading & indexing the objects, saving, printing and emailing the result list, online help, and access control.



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*Technical Environment:* Java, Servlets, JSP, Java Beans, XML, HTML, Java Script, DB2 7.1, IBM Content Manager 8.1, IBM EIP 7.1, Video Charger 7.1, Web sphere 4.0

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**Intelli.Capture (Dotsphere)** | Kotak Mahindra | Apr 2002 – Jun 2002 | Developer, Tester

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Intelli.Capture - a production grade document capturing product allowed 'capture' of huge volume of documents and was implemented with a rich set of features such as scanning, image clean-up, quality checking, indexing, index verification, and release to a production imaging system. The solution was also loaded with features such as work distribution and load balancing.

*Technical Environment:* WinNT, IBM Content Manager 6.1, PostgreSQL 7, VB 6.0

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**KLIO** | Paramis, France | Apr 2002 – Jun 2002 | Developer

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The assignment involved development of a 'pure' web-based ERP product. This customized product was meant to be BPM tool for small & medium scale manufacturing organizations, and at the same time, comparable with ERP products such as SAP and Invensys. The product was named KLIO & was designed to be modular. Each sub module had business validated CRUD functions of the corresponding entities.

*Technical Environment:* Java Servlets, HTML, and JavaScript, IBM Web Sphere App server, IBM Visual Age 3.5, WinNT, PVCS, SQL Server 7.0