



**BHADALE GROUP OF COMPANIES  
- IT AND REAL ESTATE**



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Technology Ecosystem for CPSoS: Catalogue

Bhadale IT Developers Pvt.Ltd

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**Bhadale Group of Companies**

Bhadale Group of Companies consists of Bhadale IT Developers Pvt. Ltd and Bhadale Real Estate Developers Pvt Ltd.

1. **Bhadale IT Developers Pvt. Ltd** is an IT and Computer Engineering company

This company provides consultation in areas of cutting edge technologies, research outsourcing, and software consultation related to data center and related engineering practices

2. **Bhadale Real Estate Developers Pvt. Ltd** is a Real estate company

This company provides development of Infrastructure for IT Datacenter and allied sectors. It manages the engineering design, landscaping, civil architecture, presently serving internal projects.

Bhadale Group of Companies has aggressive programs in place to serve the niche market.

**Bhadale IT Developers Pvt. Ltd Programs and Services****IT Division programs**

- 1 Cloud Architecture
- 2 AI
- 3 Digital
- 4 Automation
- 5 R&D services
- 6 Engineering services
- 7 Mentoring Services
- 8 Data center services
- 9 Outsourcing

There are various services offered under each program, details are described below

**IT Division program related services****Cloud Architecture**

- Cloud Enterprise Architecture
- Cloud Business Architecture
- Cloud Information / Website data Architecture
- Cloud Solution Architecture
- Data center Virtualization and Cloud services ( IaaS)
- Cloud Technical Architecture – Project specific
- Cloud ERP Solutions ( SaaS, PaaS)
- Cloud Strategy and Transformation
- Cloud Systems Integration and consolidation
- Cloud Project Management
- Cloud Pre sales support
- Business Needs ( RFI/RFQ/RFP assistance)
- Cloud Quality Initiatives

- Cloud Business Analysis
- Cloud Infrastructure Planning – hardware , network, storage , backup ( IaaS, PaaS)
- Cloud business portfolio assessment services ( workshops)

### **AI**

- Artificial intelligence and advanced machine learning
- Intelligent applications, Intelligent things
- Conversational systems
- Mesh app and service architecture
- Adaptive security architecture

### **Digital**

- Virtual reality and augmented reality: Brief capability, deliverables and service offering
- Digital twins
- Blockchains and distributed ledgers
- Digital technology platforms

### **Automation**

- Robotic Process Automation
- IoT
- Manufacturing robots
- BPO call center robots
- Chatbots
- Remote workers
- Hazardous jobs robots( Mine bombs, nuclear waste, underwater, space etc)

### **R&D services**

- PHD mentor, buddy
- BPO - Outsourced work in areas of research areas related to IT and Computer Engineering

### **Engineering services (Only Engg)**

- Engineering services for Data centers
- Engineering services for IT Departments
- Engineering architectures, drawings, road ways, town house planning, parking, safety, outdoor maintenance, lighting etc
- All other aspects of engineering: Civil, electrical, water and sewage, safety and mechanical motors, pumps, refrigeration, cooling

### **Mentoring Services**

- IT Mentoring
- Engineering Mentoring
- Business Mentoring
- Mentoring for special categories based on age, and disabled
- Mentoring for special professionals like Military and Govt officials under Govt Programs

### **Data center services (Engg + IT)**

- Data center Engineering services
- Data Center IT Services
- Data center Security services
- Data Center QA services
- Datacenter Cloud services
- Datacenter compliances services
- Data center based business solutions

### **Outsourcing**

- Insourcing
- Outsourcing
- Near sourcing
- Cloud sourcing
- BPO services
- IT specific services
- Engineering specific services
- Training specific services

## Our Technology Ecosystem for CPSoS

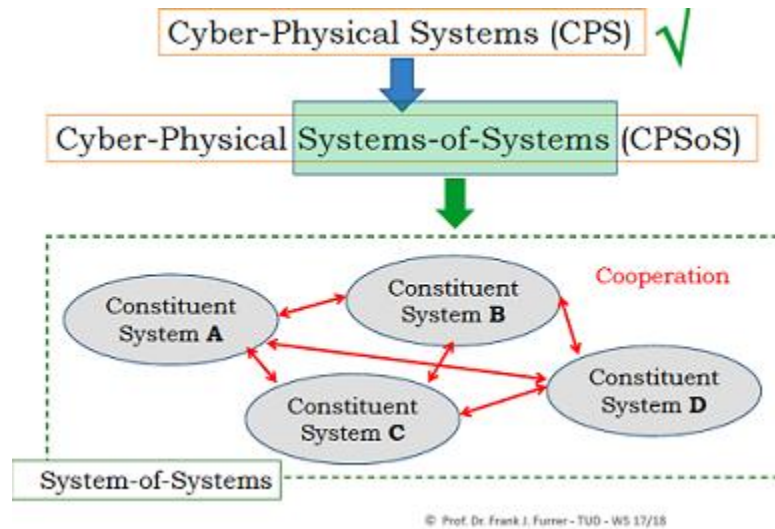


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We have a large set of tools and solutions; few are mentioned below with details tabulated

CPSoS Product Name	CPSoS Product /tool details	Usage / Use case / ecosystem/ value adds
Papyrus-SysML 1.6	Eclipse integrated development environment jointly with Papyrus	An Eclipse plug-in supporting advanced facilities for manipulating UML artifacts and SysML profiling  SysML Block Definition Diagram (BDD): Used to model the topology and the relations of a SoS.
The DANSE methodology and tools	Unified Profile for DoDAF and MoDAF (UPDM), NATO Architecture Framework (NAF)	Provides more than fifty different model types grouped in eight viewpoints. These viewpoints are: Capability Viewpoint, Operational Viewpoints, Service Viewpoint, System Viewpoints, Service Viewpoint, Data & Information Viewpoint, Project Viewpoint and Standard Viewpoint
DSL	This is a domain specific framework	This generates platform specific model (PSM). The SysML authoring tool MagicDraw has a feature set dedicated to building domain-specific languages
AMADEOS architectural framework	Arch framework	The starting point of the AF consists in defining the Mission of a SoS. Made of four different layers, namely Mission, Conceptual, Logical and Implementation.

Resilient master clock (RMC)	Hi precision clocks for system synch	Is a resilient fail-silent master clock based on satellite-based time synchronization (e.g., GPS or Galileo signals), to provide a dependable global time base for cyber-physical Systems-of-Systems
PlantUML	UML intermediate language	PlantUML is an intermediate format as it is a simple text format which makes debugging during the model transformation easier  The SysML (in XML) is transformed into Blockly by using PlantUML as an intermediary language
Google's Blockly	Open source library for adding drag and drop block coding to apps	This is primarily used for computer science education, but can also give users a way to write their own scripts or configuration for an app. Blockly has libraries for Web (JavaScript), Android (Java), and iOS (Swift/Obj-C).
Python	Programming Language	For generation of PSM , run block functions, simulator code
MAPE-K	Control loop for designing an autonomic manager over managed elements	This consists mainly in components to Monitor, Analyze, Plan and Execute the reconfiguration plan
AI/ML	Algorithms for control	Controller, MapReduce, Observer entities form the control loop ; these are subject to observations and updating for reduced error
MAS	Multi Agent systems	We offer our home grown solutions using MAS for agent design, development and testing as per open standards and specifications
Java /JADE	Middleware	We offer JADE agent development env along with Java
MagicDraw	MagicDraw is a visual UML, SysML, BPMN, and UPDM modeling tool with team collaboration support.	SysML plugin supports all SysML diagrams, including Requirements, Block Definition, Internal Blocks, Parametric and others. With this plugin, MagicDraw adds support for additional specification, analysis, design, and validation of a broad range of systems and system integrations.
Cameo Enterprise Architecture	Cameo Enterprise Architecture product, based on MagicDraw	Offers the most robust standards compliant DoDAF 2.0, MODAF, NAF 3, NAF 4, and UAF 1.0
Sparx Enterprise Architect	Sparx Systems' Enterprise Architect supports the Systems Modeling Language	Enterprise Architect, together with MDG for SysML 1.5, delivers a powerful, low cost modeling solution for Systems Engineering.

SysML AADL Profiles	MagicDraw/Cameo Enterprise Architecture and Sparx Enterprise Architect support SysML profile	<ul style="list-style-type: none"> <li>•Core AADL stereotypes and properties</li> <li>•Extension profiles for ARINC653, MILS, SESSAF(STPA), FASTAR, MADS</li> </ul>
AWS Public cloud	Cloud hosting	We offer AWS products based solutions to deploy and host CPSoS applications, IoT devices and related API, apps
CPSoS Industrial products	Industry grade devices, tools and technologies	We offer related virtualization, containerization, networking and various deployment targets to host distributed CPSoS Systems like Smart City ecosystem and bundled solutions
Training material	External mentoring and training for systems engineers and aspirants	We offer details of various CPS, SoS, and CPSoS methodologies, processes, sample templates, IDE and proof of concepts for your Lab work

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