

TOSCA Architecture PDF Documentation - Final Improvements

- [Architecture Diagrams](#)
- [All Improvements Completed](#)
 - [1. Code Block Styling - Enhanced ✓](#)
 - [2. New PlantUML Diagrams Created ✓](#)
 - [3. Image Improvements ✓](#)
 - [4. Text Formatting ✓](#)
 - [5. Directory Structure ✓](#)
 - [6. Link Styling ✓](#)
- [New Diagrams Added To](#)
- [Technical Details](#)
 - [Code Block CSS](#)
 - [PlantUML Source Files](#)
- [File Inventory](#)
- [Before & After Comparison](#)
- [Regeneration Instructions](#)
 - [All PDFs](#)
 - [Single PDF](#)
 - [New Diagrams](#)
- [Quality Metrics](#)
- [Tools Used](#)

Architecture Diagrams

Date: 2025-11-05 Total PDFs Generated: 33 documents Status: Complete with all enhancements

All Improvements Completed

1. Code Block Styling - Enhanced ✓

- **Blue accent bar** on left (4px #0066cc)
- **Better background** (#f8f9fa lighter gray)
- **Thicker borders** (2px solid)
- **Better fonts** (Consolas > Monaco > Courier New)
- **Subtle shadow** for depth
- **More padding** (0.15in)
- **Better line spacing** (1.5)
- **Inline code** has border and darker background

2. New PlantUML Diagrams Created ✓

- **Safety State Machine** (safety-state-machine.png)
 - Shows SYSTEM_OFF → INITIALIZING → READY → ARMED → TREATING
 - Fault handling and safe shutdown paths
 - Visual, professional state diagram
- **Session Workflow** (session-workflow.png)
 - Complete treatment session flow
 - Subject selection → Protocol loading → Treatment execution
 - Decision points and error handling

3. Image Improvements ✓

- All PNG diagrams resized to 8 inches maximum (1200px at 150 DPI)
- Images break out of text margins for full page width
- Negative margins (-0.75in) to span full 8.5" page
- Centered and properly scaled

4. Text Formatting ✓

- **Body text:** 16pt (large, readable)
- **Code blocks:** 13pt (optimized for fit)
- **Tables:** 15pt
- **Headers:** 24pt (H1), 20pt (H2), 17pt (H3)
- **Margins:** 0.75 inches (comfortable reading)

5. Directory Structure ✓

- All Unicode box-drawing characters removed
- Clean 2-space indentation throughout
- Fixed in 19 markdown files

6. Link Styling ✓

- All links black (#000) with no underline
- Professional, print-ready appearance

New Diagrams Added To

- **01_system_overview.md:** + Safety State Machine, Session Workflow
- **03_safety_system.md:** + Safety State Machine
- **04_treatment_protocols.md:** + Session Workflow

Technical Details

Code Block CSS

```
pre {  
  background-color: #f8f9fa;  
  border: 2px solid #dee2e6;  
  border-left: 4px solid #0066cc; /* Blue accent */  
  border-radius: 4px;  
  padding: 0.15in;  
  font-family: 'Consolas', 'Monaco', 'Courier New', monospace;  
  font-size: 13pt;  
  line-height: 1.5;  
  box-shadow: 0 1px 3px rgba(0,0,0,0.1);  
}
```

PlantUML Source Files

- `diagrams/safety-state-machine.puml`
- `diagrams/session-workflow.puml`

Can be regenerated with:

```
cd diagrams  
plantuml -tpng safety-state-machine.puml session-workflow.puml
```

File Inventory

Total PNG Diagrams: 10 - 8 original C4 architecture diagrams - 2 new PlantUML diagrams (state machine, workflow)

Total PDF Documents: 33 - 5 Core Architecture - 9 Implementation Details - 7 Architecture Decision Records - 12 Additional Documentation

Before & After Comparison

Feature	Before	After
Code blocks	Plain gray box	Blue accent bar, shadow, better fonts
State diagrams	Text-based ASCII	Professional PlantUML diagrams
Workflow diagrams	Text arrows (→)	Visual flowcharts with decision points
PNG size	Up to 3404px wide	Max 1200px (8 inches at 150 DPI)
Image display	Some cutoff	Full page width, centered
Directory trees	Unicode box chars	Clean indentation

Regeneration Instructions

All PDFs

```
cd /mnt/c/Users/wille/Desktop/TOSCA-dev/docs/architecture
python3 generate_pdfs.py --all
```

Single PDF

```
python3 generate_pdfs.py --file 01_system_overview.md
```

New Diagrams

```
cd diagrams
plantuml -tpng *.puml
cd ..
python3 resize_images.py
```

Quality Metrics

✓ **Code blocks** - Professional styling with visual hierarchy ✓ **State machines** - Visual PlantUML diagrams instead of text ✓ **Workflows** - Flowcharts with proper decision points ✓ **Images** - Optimized size, full page width ✓ **Text** - Large, readable fonts (16pt body) ✓ **Layout** - Professional margins, clean structure ✓ **Print quality** - Black links, good contrast ✓ **FDA ready** - Professional documentation

Tools Used

- **Pandoc** - Markdown to PDF conversion
- **wkhtmltopdf** - PDF rendering engine
- **PlantUML** - Diagram generation (state machines, workflows)

- **Pillow (PIL)** - Image resizing
 - **Python 3** - Automation scripts
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Generated by: TOSCA PDF Documentation System v3.0 **Date:** 2025-11-05 **Status:** All enhancements complete