

# Week 2 Status: Confluence Verification

**Date:** January 31, 2026

**Status:**  IN PROGRESS

**Branch:** devssite

## Current State

### What's Working

#### Python Pipeline:

-  `spec_to_ir.py` generates proper semantic IR
-  `ir_to_code.py` generates code successfully
-  End-to-end pipeline works: Spec → IR → Code
-  Tested with ardupilot\_test specs
-  Output: Valid Python code with function stubs

#### Rust Pipeline:

-  `stunir_spec_to_ir` generates proper semantic IR
-  `stunir_ir_to_code` requires `--target` parameter (not auto-detected)

#### SPARK Pipeline:

-  `stunir_spec_to_ir_main` fails silently (no output, no error)
-  Cannot test `ir_to_code` without IR

## Issues Found

### Issue #1: SPARK spec\_to\_ir Fails Silently

#### Command:

```
./tools/spark/bin/stunir_spec_to_ir_main --spec-root spec/ardupilot_test --out /tmp/test.json
```

**Result:** No output, no error, no IR file created

**Impact:** Cannot test SPARK pipeline

### Issue #2: Rust ir\_to\_code Requires Target Parameter

#### Command:

```
./tools/rust/target/release/stunir_ir_to_code ir.json -o output.txt
```

**Error:**

```
error: the following required arguments were not provided:
--target <TARGET>

Usage: stunir_ir_to_code --target <TARGET> --output <OUTPUT> <IR_FILE>
```

**Impact:** Cannot auto-test Rust pipeline without knowing target

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### ⚠ Issue #3: Python ir\_to\_code Requires Multiple Parameters

**Command:**

```
python3 tools/ir_to_code.py ir.json output.txt
```

**Error:**

```
usage: ir_to_code.py [-h] --ir IR --lang LANG --templates TEMPLATES --out OUT
```

**Correct Usage:**

```
python3 tools/ir_to_code.py --ir ir.json --lang python --templates templates/python --out output_dir
```

**Impact:** Confluence test script needs updating

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## Manual Testing Results

### Python Pipeline ✓

```
# Step 1: Spec → IR
python3 tools/spec_to_ir.py --spec-root spec/ardupilot_test --out /tmp/test.json
# Result: SUCCESS - Generated semantic IR with 11 functions

# Step 2: IR → Code
python3 tools/ir_to_code.py --ir /tmp/test.json --lang python --templates templates/
python --out /tmp/output
# Result: SUCCESS - Generated mavlink_handler.py
```

**Output Sample:**

```
def parse_heartbeat(buffer, len):
    """parse_heartbeat"""
    # TODO: implement
    raise NotImplementedError()
```

## Next Steps

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### Immediate (Today)

1. **Fix SPARK spec\_to\_ir** - Debug why it fails silently
2. **Update confluence test script** - Use correct command-line arguments
3. **Add target detection** - Auto-detect target from IR or spec

### Short-term (This Week)

1. **Complete confluence testing** - Test all 3 working pipelines
  2. **Document API differences** - Create unified interface spec
  3. **Generate confluence report** - Show which pipelines match
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## Confluence Test Script Status

**Current:** ❌ Failing - Incorrect command-line arguments

**Fixed:** ⚠️ Needs update for:

- Python: `--ir`, `--lang`, `--templates`, `--out`
  - Rust: `--target`, `--output`
  - SPARK: Debug silent failure
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## Week 2 Progress

- [x] Create confluence test infrastructure
- [x] Test Python pipeline manually
- [x] Identify SPARK issues
- [x] Identify Rust issues
- [ ] Fix SPARK spec\_to\_ir
- [ ] Update confluence test script
- [ ] Run full confluence tests
- [ ] Generate confluence report
- [ ] Commit to devsite

**Estimated Completion:** End of Week 2 (pending SPARK fix)