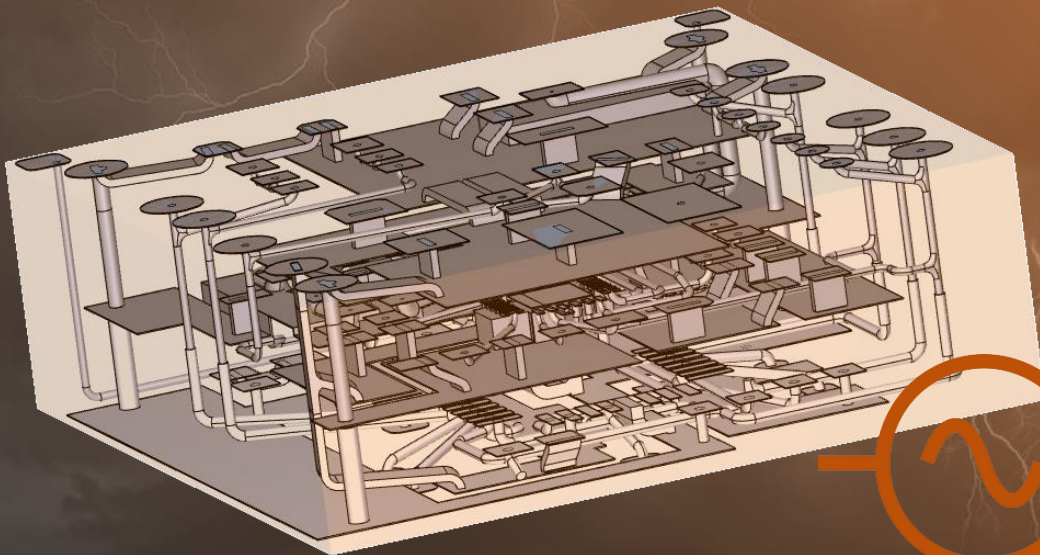




# J.A.M.E.S

**Heterogeneous  
integration**

RF-Synthesizer



**Requirements**  
and targeted architecture

# Heterogeneous Integration of an RF-Synthesizer

## 1. Requirements

Following basic requirements shall be performed in the design

- The design shall consist of the named architecture elements
- The wires shall be designed to represent a three-dimensional routing
- Miniaturization through embedding of external COTS components by
  - o Stacking of several AMEs
  - o Populating and continue printing scheme to yield completely embedded structures
- Replace COTS capacitors with AME printed capacitors
- Use new concepts and formfactors for GND and VCC distribution
- Use of structural shielding on signal sensitive locations
- Use of coaxial RF-lines for RF distribution
- Easily accessible external interfaces (for programming, RF-connector and DC powering)

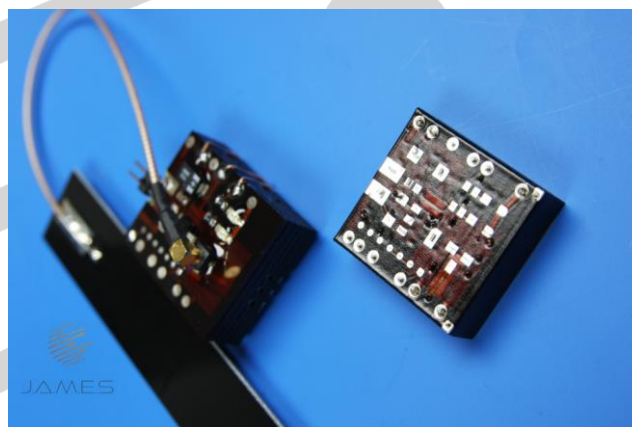


Figure 1: example for RF-Synthesizer, AME-structure by J.A.M.E.S

## 2. Architecture

The basic elements of this functional blocks are

- Microcontroller
- Reference Oscillator
- Phased Locked Loop Controller
- Gain block
- Voltage Controller