

Advanced Systems Design

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Military-Proven Model-Based Design (MDB) with advanced Metric-Driven Verification (MDV): Re-usable, Effective and Fast-to-Market Design Methodologies

At [Advanced systems Design](http://www.asdvi.com) (ASD), all engineering work is conducted under [Military-Proved Model-Based Design](http://www.asdvi.com) (MBD) with [Metric-Driven Verification](http://www.asdvi.com) (MDV) Methodologies. The MBD-MVD design-flow and product delivered by ASD are shown in Figure 1.

1 Model-Based Design vs. Traditional Workflow

As stated in <http://www.mil-embedded.com/articles/id/?4881>: “Aerospace companies who use Model-Based Design typically reduce their verification time by about 90 percent primarily because bugs are typically discovered and removed at the design and simulation stage, instead of the test stage.”

1.1 Traditional Work Flow

Traditionally, system engineers, algorithm developers, and hardware engineers use different tools to do their jobs, which can introduce gaps in the workflow that may lead to:

- errors in the design and delays in the development process
- multiple implementations that are inconsistent
- difficulties in design modification
- difficulties in keeping reference of different codes in-sync
- time-consuming and expensive design.

1.2 Model-Based Design (MBD)

As shown in Figure 1, the Model-Based Design allows engineers across disciplines to use a common set of models in an extensible environment to define requirements, develop algorithms, implement in firm- and hardware, and test and verify their designs.

At ASD, the Model-Based Design involves (but is not limited to) the following design tools:

- Matlab
- Matlab Coder
- Matlab Compiler
- Simulink HDL Coder
- SysGen
- Xilinx Product Navigator (ISE).

With Model-Based Design, ASD can:

- maintain a common Design-&-Verification-Platform (DVP) to share the design that is re-usable, re-scalable, and easy to modify and test at every development phase
- effectively use Metric-Driven Verification (MDV) process (see Figure 2) that leads to:
 - design faster with grater predictability, productivity and profitability
 - get product quickly with less manpower
 - test more systematically and frequently
 - spend more time on research and improving the design
 - reuse and elaborate the design at every development phase.

Military-Proven Model-Based (MBD) Design Flow with Metric-Driven Verification (MDV)

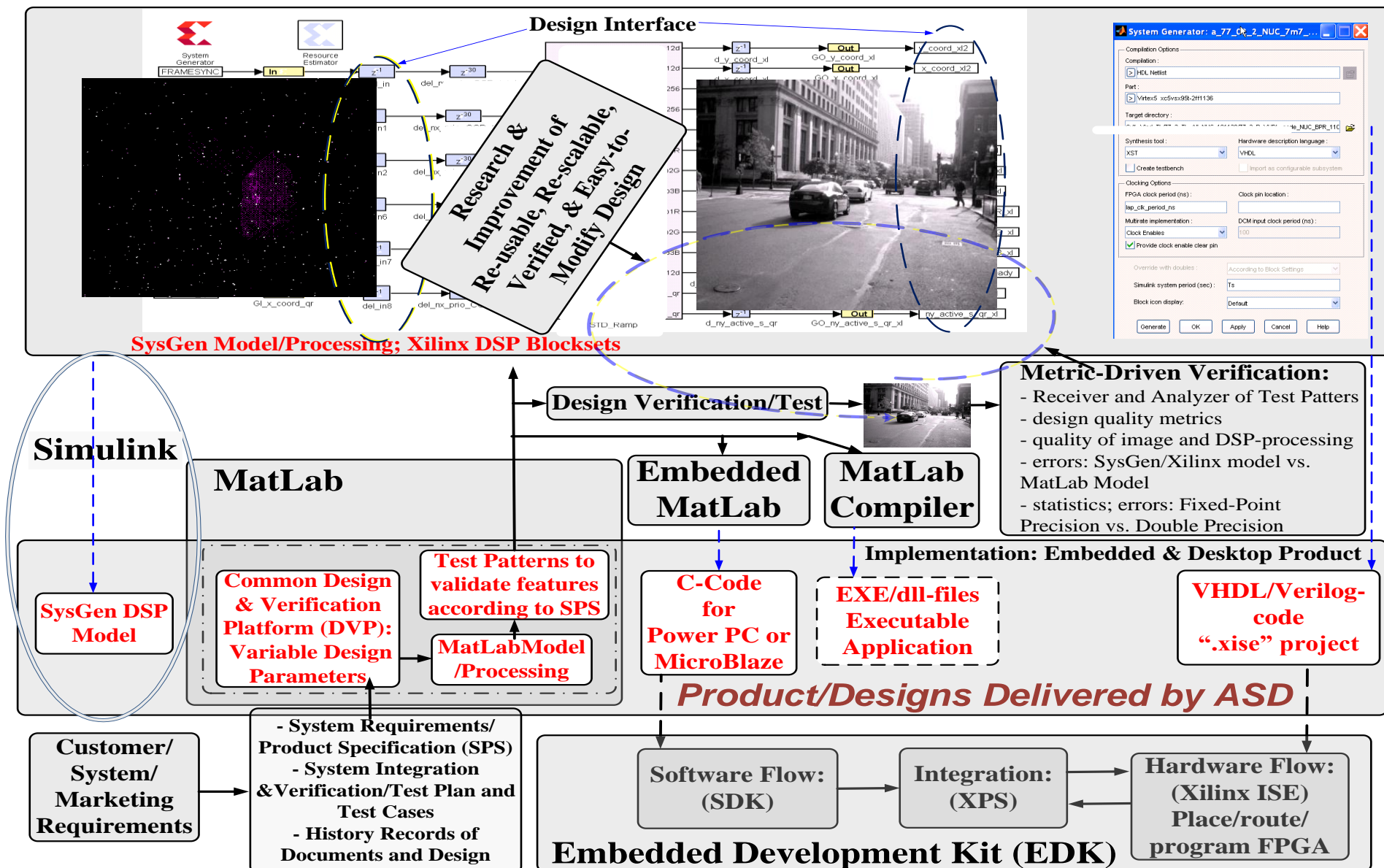


Figure 1. Military-Proven Model-Based Design with advanced Metric-Driven Verification used at ASD: Re-usable, Effective and Fast-to-Market Design Methodologies (see Section 1.2) with verification time reduced by about 90 percent vs. the traditional workflow (see Section 1.1 and Figure 2).

Improvement in Verification Efficiency

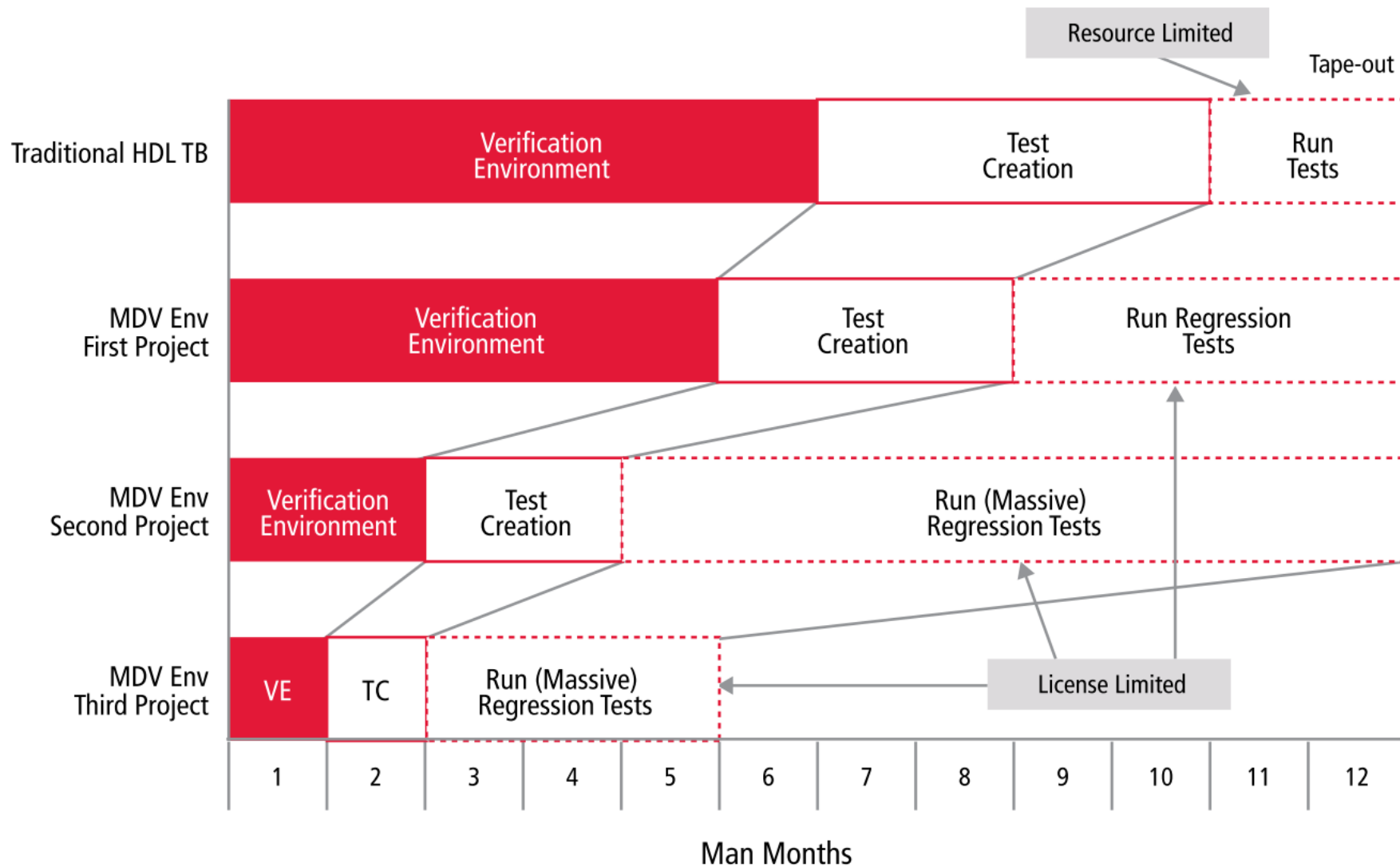


Figure 2. Example of Improvement and Verification Efficiency of Metric-Driven Verification (MDV) Methodologies: MDV vs. Traditional Design (the figure copied from the original source: http://www.cadence.com/rl/Resources/white_papers/max_metric_driven_ver_wp.pdf).