

CMSC131

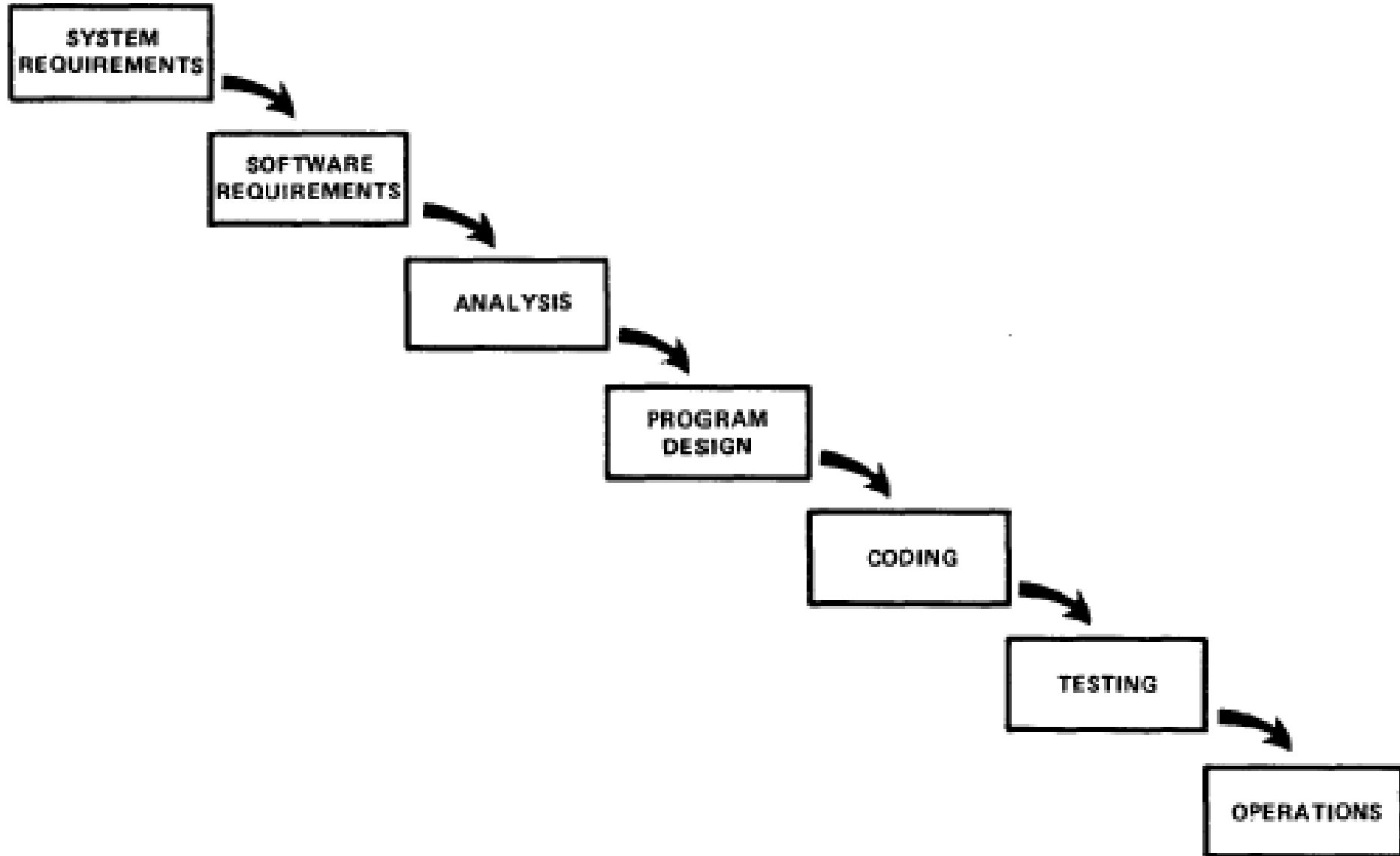
Some Design Issues and
Approaches

The so-called “Waterfall” Model

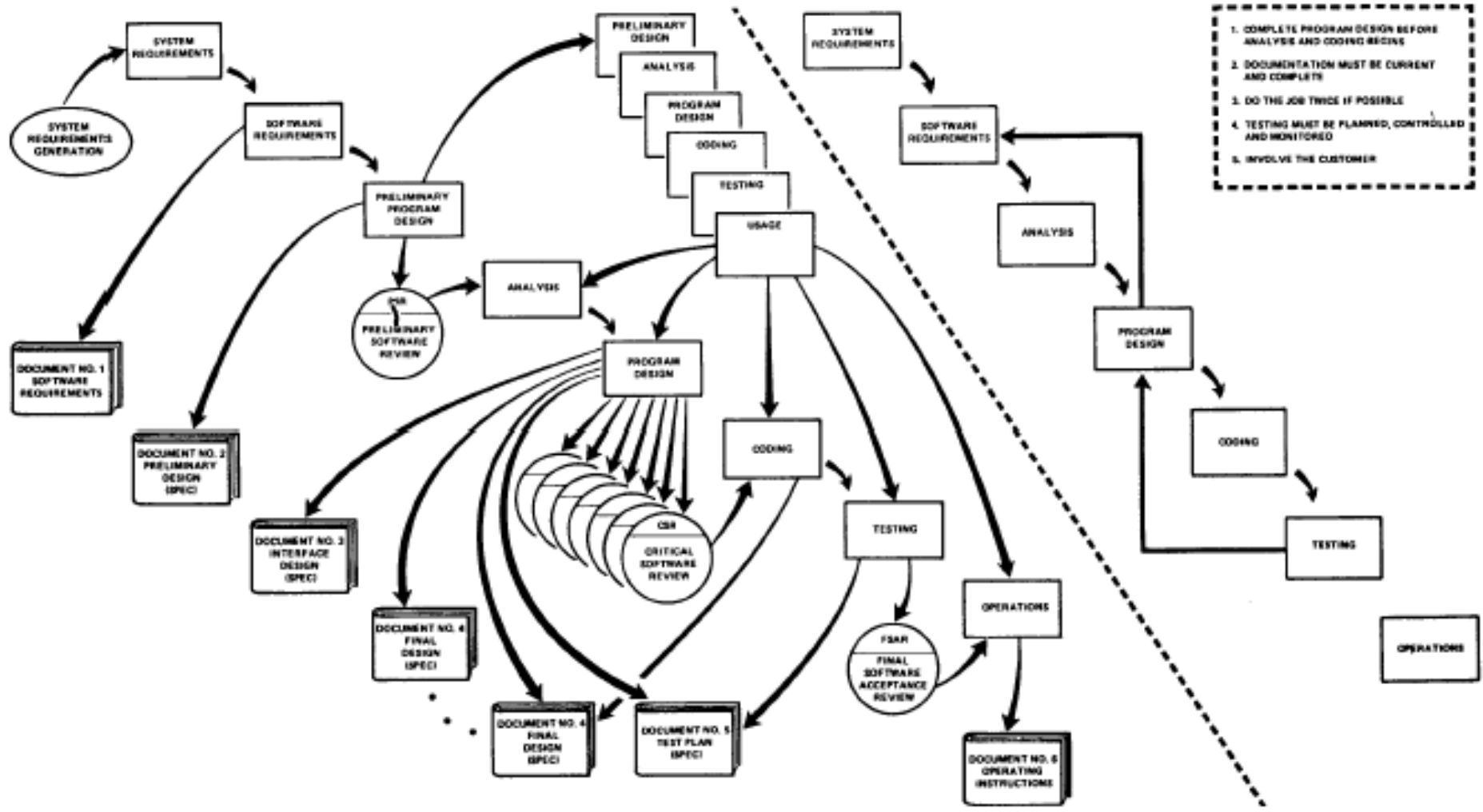
This model was presented in 1970 by Winston Royce as a ***flawed*** (and possibly only as a ***hypothetical***) model and then some actual variations on that model which were actually in use were discussed.

The model does present the various stages of design but presents the process as a one-way traversal through the stages...

“Waterfall” – Looks simple, right?



“Life” - Far more *interesting* in reality.



What is this in “English”?

Essentially:

- Find out what the customer wants.
- Plan how you will build the product.
- Build it.
- Test it against what the customer requested.
- Deliver it (and the user manual) to the user.

We typically do these things, but might...

- ...iterate between through them in various orders.
- ...build a little, test that, build some more, test that.
- ...elect for incremental design on the whole.

What if you don't think about design?

It might cost MONEY! You might have to discard a large amount of code...

- FBI Virtual Case File \$170M project where \$105M “worth of code” was scrapped).
 - <http://spectrum.ieee.org/print/1455>
- Denver Airport Automated Baggage System that cost around \$250M, didn't work, delayed the airport's opening, and lead to reverting to the “old fashioned” way.
 - <http://www.nytimes.com/2005/08/27/national/27denver.html>

It might cost LIVES!

- Therac-25

It might cost an election!

- The famous “butterfly ballot” in Palm Beach, Florida - 2000.

Good design can improve...

The overall coding process (by the way, coding typically ends up being less than half of the cost of a project in industry).

The testing process (sometimes part of the coding process, other times a different team might be doing it).

Debugging modules when tests against the requirements documents fail.

Efficiency of the end product when released (speed, resources).

To learn more about design take...

CMSC132

CMSC351

CMSC434

CMSC435

...and many of the other classes we offer too...

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