

# Agile Process and Federal Aide Oversight

How I learned to love Rule 940.11...

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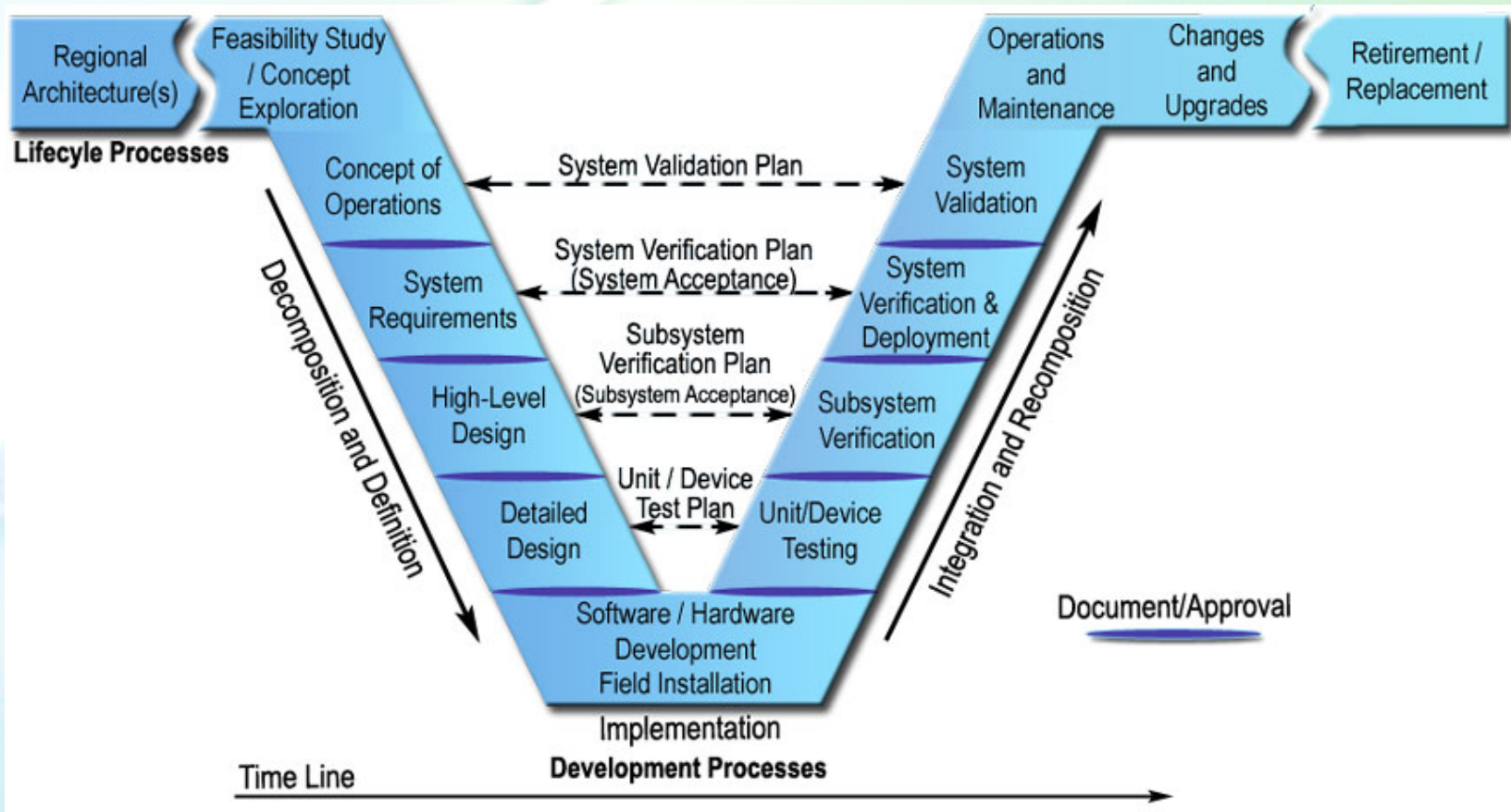
# The Purpose of Federal Oversight

**Show accountability for Federal Aid dollars**

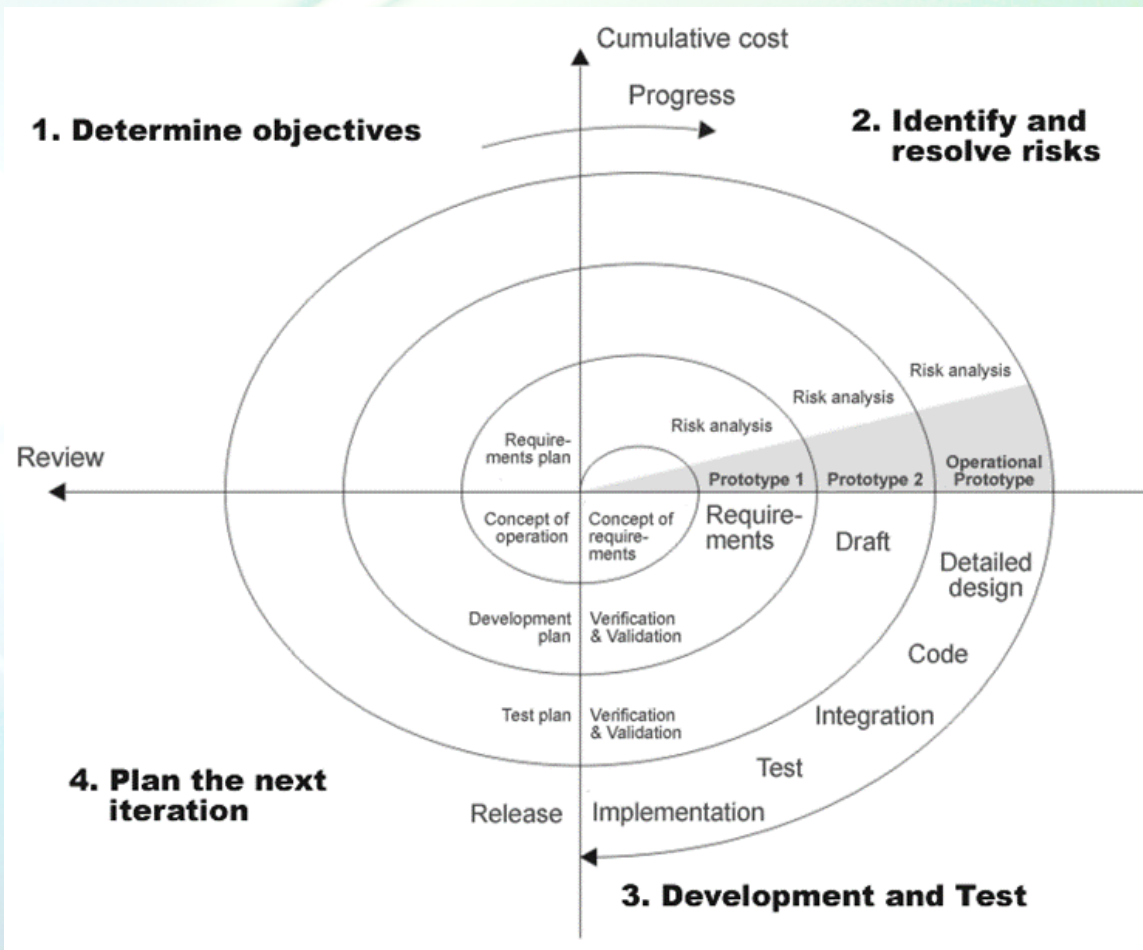
**Manage outcome**

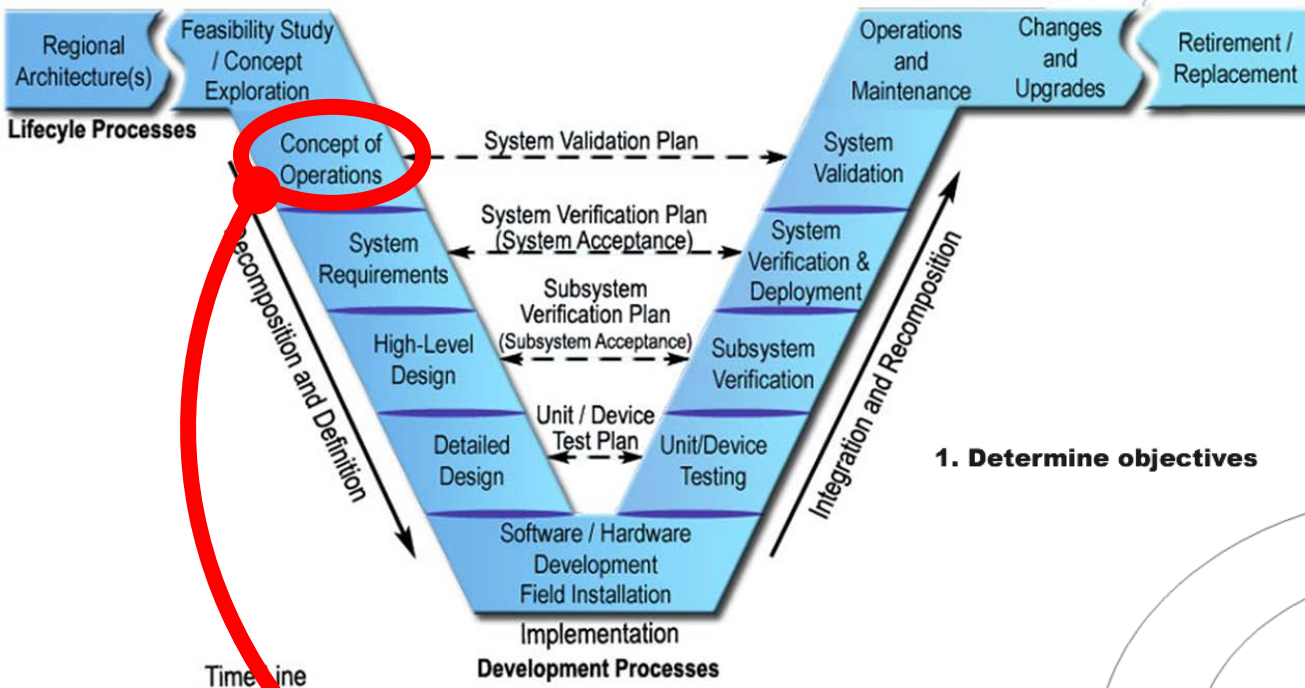
- Formalize how Form follows Fit follows Function Follows Objectives
- Simplify to these questions:
  - What problems are you trying to solve?
  - What are the limits of the solution?
  - How do you know if the problem was solved and how well was it solved?
- Devil are all in the details

# Vee System Engineering Process

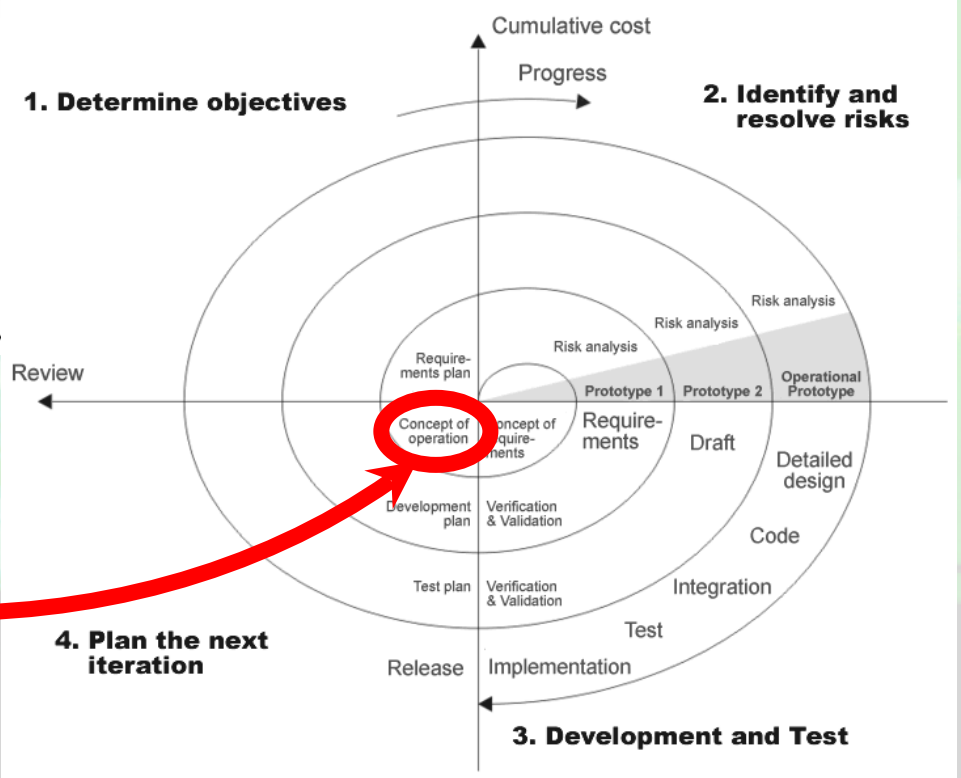


# Spiral Process





Separated at Birth?



# Spiraling the Vee

## Set overall Goals/Objectives and their supporting Needs

### Establish a traceability chain

- Needs(ConOps) -> Requirement(High Level) -> Requirement(Detailed) -> Design -> Testing(unit) -> Requirement adjustment(Detailed) -> Requirement(High Level) -> Needs(ConOps)

### Set a process to manage change from Day 1

- Manage changes to assess impact on original objectives
- Manage changes and it's effect of dependent requirements and objectives
- Help to identify parameters and limits critical to trade offs decisions.

# Example 1 – SMART Truck Parking

**This was a Research Project**

**Goals were clear, but solutions were filled with uncertainties**

- User acceptance via User Interfaces
  - User Interface design – If the user is not involved, your design is probably wrong.
  - User interaction are relatively challenging
- Field deployment requires flexibility in design

**But the Research Objective are fixed as expressed in the Concept of Operations**

# SMART Truck Parking Traceability

**System Need S.1** Trucker, Fleet or Logistics Operator Gets Truck Stop Attribute Information via Web Browser

User Needs	System Need	System Need	System Need Description	High Level System Requirement	Requirement Number	Priority	Other System Needs with Same Requirement
N.1.1 N.2.1	S.1.1	S.1.1.1	The user accesses the system website. (e.g. www.smarttruckparking.com)	The system shall provide a web site that includes a database of truck stop attributes	R.1	2	S.1.4.1, S.1.7.1, S.2.4.1, S.3.1.1, S.3.5.1
		S.1.1.2	The system provides a "search by location" interface.	The system web site shall provide a page for the purposes of accessing truck stop information	R.1.1	2	
		S.1.1.3	The user is presented with a web page showing appropriate search fields for location.	The truck stop information access web page (R.1.1) shall provide the ability for the user to search the database for trucks stops according to city name and point of interest	R.1.1.1	2	S.3.1.2, S.3.5.2
		S.1.1.4	The user enters desired truck stop location based on city name, and point of interest.	The truck stop information web page (R.1.1) shall provide a mechanism for the user to specify city name and point of interest.	R.1.1.2	2	S.3.1.3, S.3.5.3



# SMART Truck Parking Requirement

System Requirement		Comments	Revision Details
R.1	The system shall provide a web site that includes a database of truck stop attributes.		Ok
R.1.1	The system web site shall provide a page for the purposes of accessing truck stop information.		Ok
R.1.1.1	The truck stop information access web page shall provide the ability for the trucker, fleet or logistics operator to search the database for truck stops according to city name and facility name.		Ok
R.1.1.1.1	The system shall present a web page showing a search field for city location.		Ok
R.1.1.1.2	The system shall present a web page showing a search field for facility name.		Ok
R.1.1.1.3	Upon first visit to the site, the system shall query the user and ask if it can know his or her current location.		Added New
R.1.1.2	The truck stop information web page shall provide a mechanism for the trucker, fleet or logistics operator to specify city name and facility name as parameters of the search.		Revised

# Example 2 – San Diego ICM

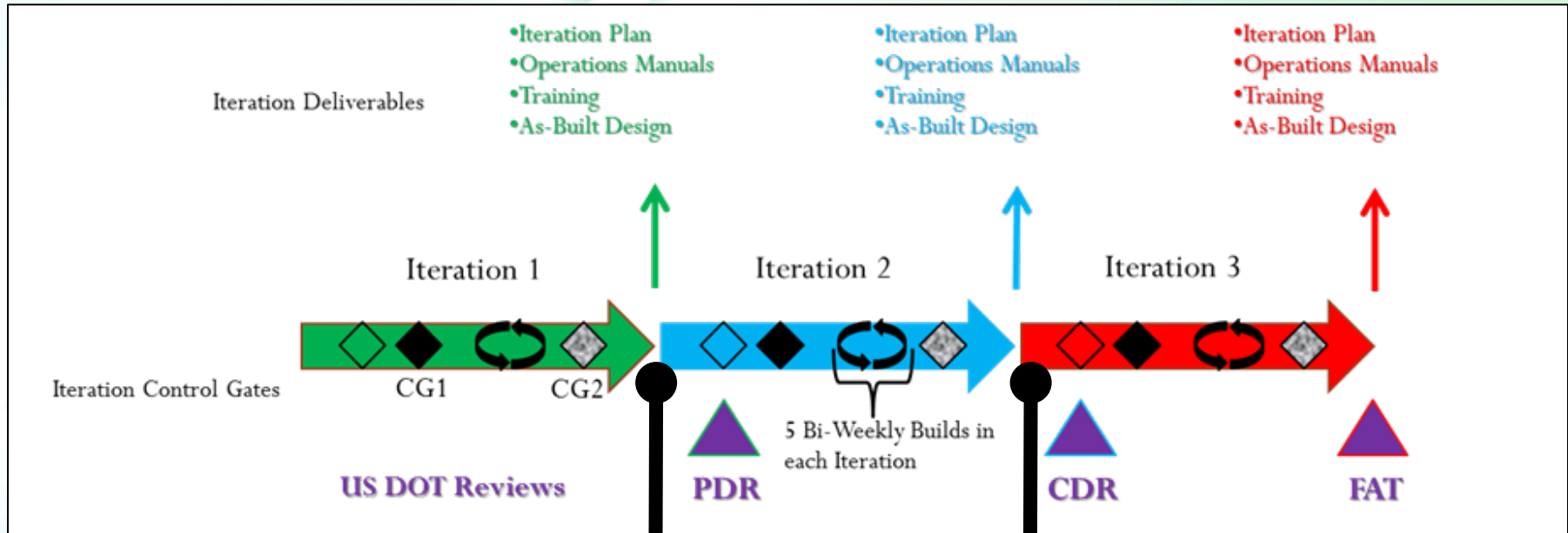
## Ambiguities related to:

- Decision Support System performance
- User Interface Design needs
- Business Rules Processing Management Systems Performance
- Complexity of multiple interdependent legacy systems, stakeholder goals, new processes

## Modeled on OpenUP Process

- Open Source process framework based on Rational Unified Process
- Part of the Eclipse Process Framework

# San Diego ICM Iteration Plan



Saw tooth Variation



# San Diego Requirement example

Requirement ID	Description	User Need ID
<b>RAC-DF-IN-1</b>	The DSS - Road Asset Configuration and Conditions Data Store shall collect data from the DSS - Data Hub to support internal subsystem access to current "qualified" or "processed" data inventory and status data.	1,3
<b>RAC-DF-IN-1.1.1</b>	The DSS - Road Asset Configuration and Conditions Data Store shall collect "transportation control coordination" data from the DSS - Data Hub based on a system or user specified request. This data flow uses the following standards;[Inside System Boundary]: TMDD Requirements: 3.3.6 (control elements only), 3.3.7	1,3
<b>RAC-DF-IN-1.1.1.1</b>	The DSS - Road Asset Configuration and Conditions Data Store shall collect "transportation control coordination" from the DSS - Data Hub after every 30 seconds, but before every 2 minutes.	1,3
<b>RAC-DF-IN-1.1.2</b>	The he DSS - Road Asset Configuration and Conditions Data Store shall collect "transportation information coordination" from the DSS - Data Hub based on a system or user-specified request. This data flow uses the following standards;[Inside System Boundary]: TMDD Requirements: 3.3.4, 3.3.5, 3.3.6, 3.3.7	1,3
<b>RAC-DF-IN-1.1.2.1</b>	The DSS - Road Asset Configuration and Conditions Data Store shall collect "transportation information coordination" from the DSS - Data Hub no less than every second, and no more than every 2 minutes.	1,3
<b>RAC-DF-IN-1.1.3</b>	The DSS - Road Asset Configuration and Conditions Data Store shall collect "archived data product" requests from the DSS - Data Hub for the time period specified. This data flow uses the following standards;[Inside System Boundary]: TMDD Requirements: 3.3.7	1,3

# Oversight Considerations

## 1. Walkthrough Review

- 1.1 Integrate traceability and not as a separate deliverable
- 1.2 Use traceability to assess how changes to requirements or designs have on objectives

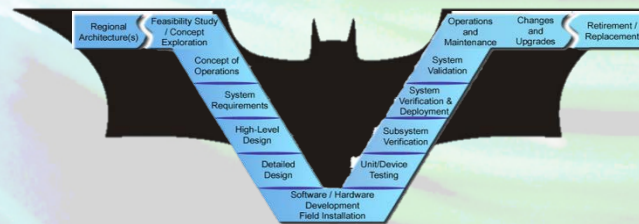
## 2. Document delivery

- 2.1 Documents are not completed until the project is over
- 2.2 Documents shall track changes in project
  - 2.2.1 Requirements get refined – document it
  - 2.2.1 Requirement inheritance changes – document it
- 2.3 Demand to see how documentation changes are addressed in either Project Management Plan or SEMP

# Final Thoughts

1. **Veve Process is not a handicap – it provides a structure to start from system objective and system validation**
2. **Check list oversight will not support agile/iterative development**
3. **Level of complexity of transportation projects will continue to increase.**

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Veve Process or Batarang?