BCDV1011 Design Patterns for Blockchain

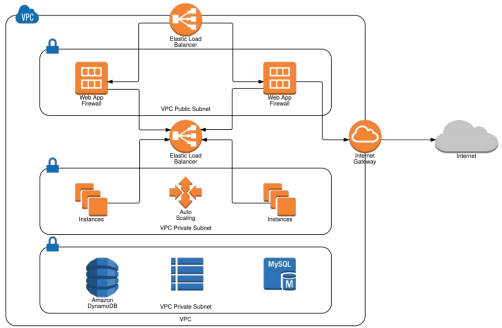
Presenting architectures and building a project plan

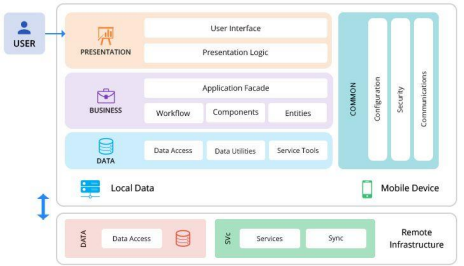
Presenting an architecture

- Architectural document
- Flow diagrams
- State diagrams
- Data definitions

Architectural document

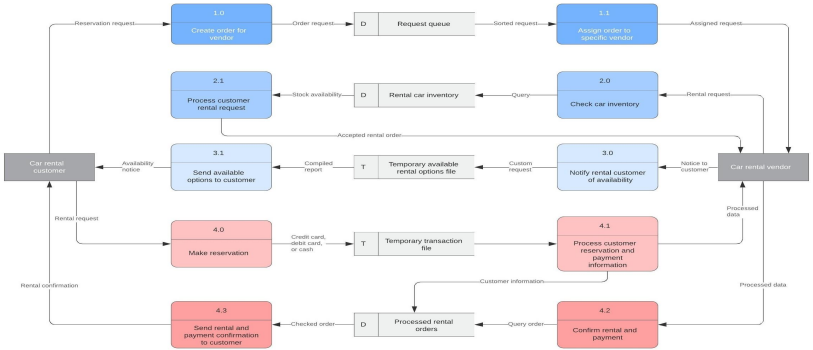
- Describe goals of architecture
- Start from high-level and work down
- Architectures for
  - Smart contract - data (types, names) and functions (parameters, modifiers)
  - Web/mobile app - data, functions
  - Server - microservices, integrations
- Tech stack - technologies, modules, libraries
- Hosting - cloud services, availability

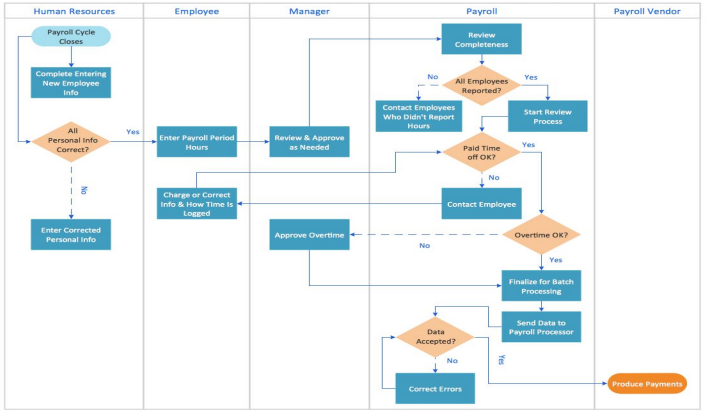




Flow diagram

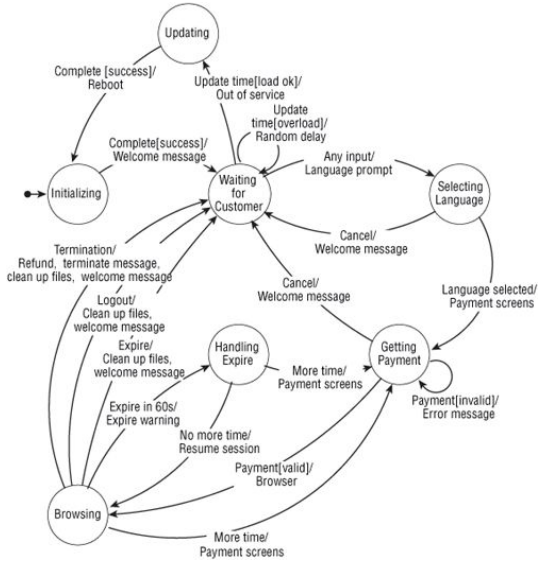
- This is the start of user stories and UX design
- Explains the steps the data/user needs to go through





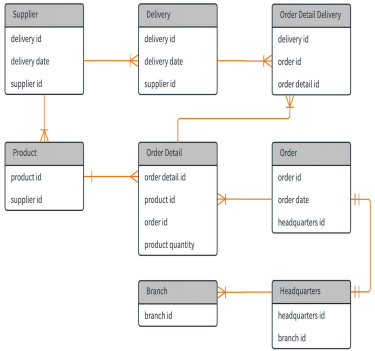
State diagrams

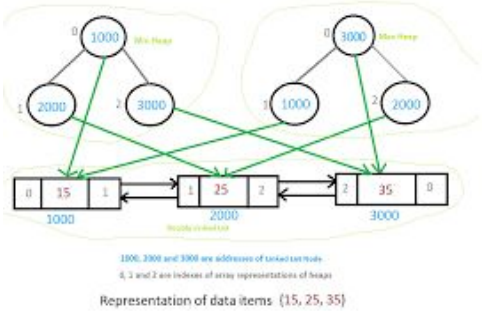
- Identifies the states that the state data is in and the transitions to move between them



Data definitions

- State data types and names
- Data structure explanations
- Database data dictionary
- Entity relationship diagram





Representation of data items {15, 25, 35}

Data Dictionary

Data Dictionary outlining a Database on Driver Details in NSW

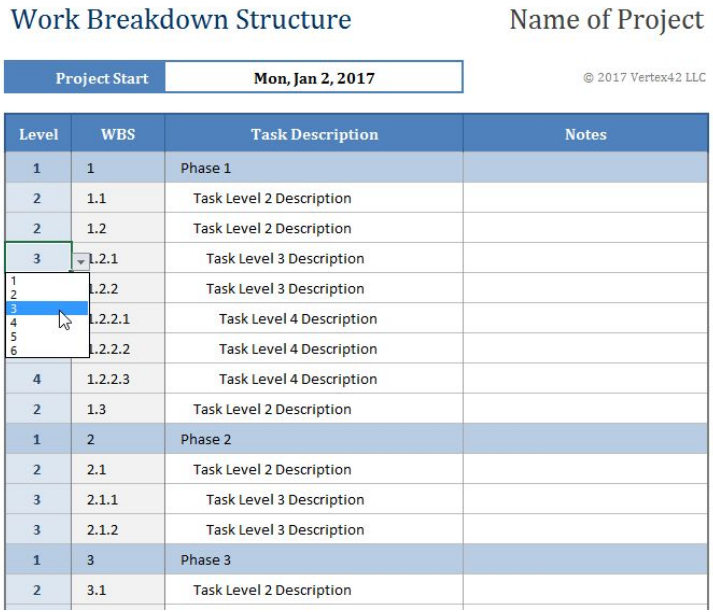
Field Name	Data Type	Data Format	Field Size	Description	Example
License ID	Integer	NNNNNN	6	Unique number ID for all drivers	12345
Surname	Text		20	Surname for Driver	Jones
First Name	Text		20	First Name for Driver	Arnold
Address	Text		50	First Name for Driver	11 Rocky st Como 2233
Phone No.	Text		10	License holders contact number	0400111222
D.O.B	Date / Time	DD/MM/YYYY	10	Drivers Date of Birth	08/05/1956

Creating a project plan

- Project decomposition
- Time estimates
- Staffing
- Dependencies
- Cost estimate

Project decomposition

- List out all of the major tasks, fill in sub tasks
- Breakdown of tasks based on architecture, technology, develop type



Work Breakdown Structure

Name of Project

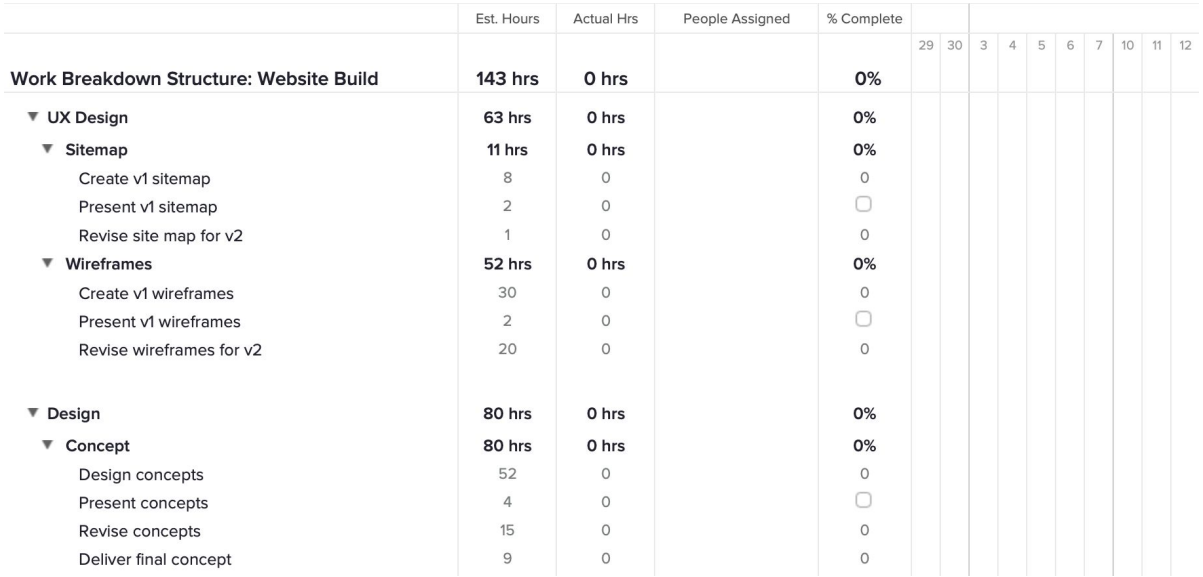
Project Start	Mon, Jan 2, 2017

Level	WBS	Task Description	Notes
1	1	Phase 1	
2	1.1	Task Level 2 Description	
2	1.2	Task Level 2 Description	
3	1.2.1	Task Level 3 Description	
	1.2.2	Task Level 3 Description	
	1.2.2.1	Task Level 4 Description	
	1.2.2.2	Task Level 4 Description	
4	1.2.2.3	Task Level 4 Description	
2	1.3	Task Level 2 Description	
1	2	Phase 2	
2	2.1	Task Level 2 Description	
3	2.1.1	Task Level 3 Description	
3	2.1.2	Task Level 3 Description	
1	3	Phase 3	
2	3.1	Task Level 2 Description	

1
2
3
4
5
6

Time estimates

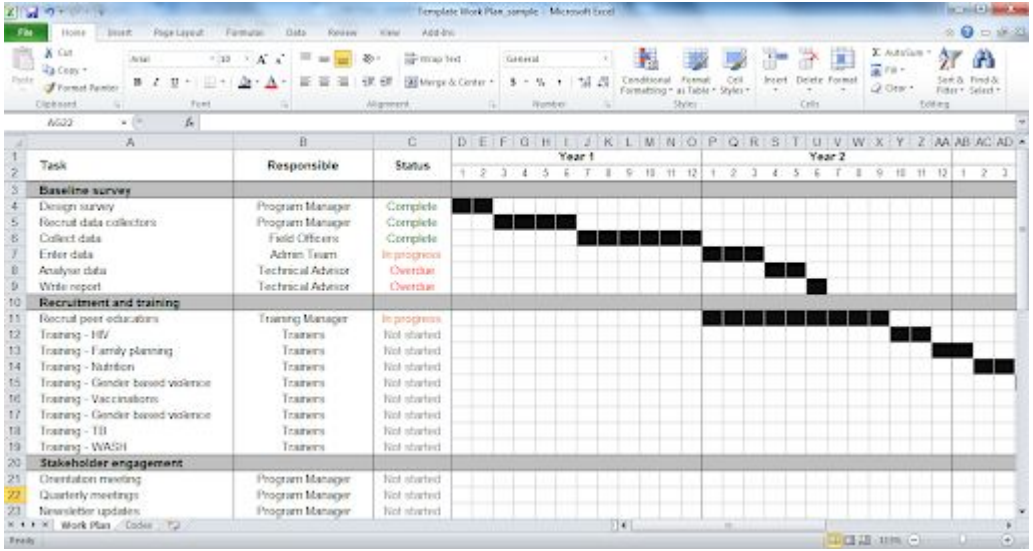
- Estimate how long each sub task will take



	Est. Hours	Actual Hrs	People Assigned	% Complete	29	30	3	4	5	6	7	10	11	12
Work Breakdown Structure: Website Build	**143 hrs**	**0 hrs**		**0%**										
▼ **UX Design**	**63 hrs**	**0 hrs**		**0%**										
▼ **Sitemap**	**11 hrs**	**0 hrs**		**0%**										
Create v1 sitemap	8	0		0										
Present v1 sitemap	2	0		☐										
Revise site map for v2	1	0		0										
▼ **Wireframes**	**52 hrs**	**0 hrs**		**0%**										
Create v1 wireframes	30	0		0										
Present v1 wireframes	2	0		☐										
Revise wireframes for v2	20	0		0										
▼ **Design**	**80 hrs**	**0 hrs**		**0%**										
▼ **Concept**	**80 hrs**	**0 hrs**		**0%**										
Design concepts	52	0		0										
Present concepts	4	0		☐										
Revise concepts	15	0		0										
Deliver final concept	9	0		0										

Staffing

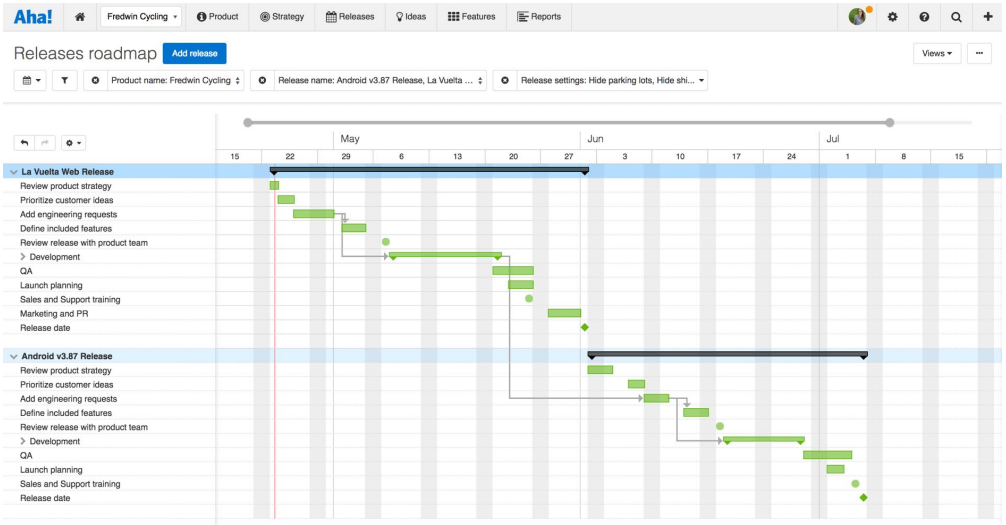
- Assign roles to tasks
- Assign people to roles



Task	Responsible	Status
Baseline survey		
Design survey	Program Manager	Complete
Recruit data collectors	Program Manager	Complete
Collect data	Field Officers	Complete
Enter data	Admin Team	In progress
Analyse data	Technical Advisor	Overdue
Write report	Technical Advisor	Overdue
Recruitment and training		
Recruit peer educators	Training Manager	In progress
Training - HIV	Trainers	Not started
Training - Family planning	Trainers	Not started
Training - Nutrition	Trainers	Not started
Training - Gender based violence	Trainers	Not started
Training - Vaccinations	Trainers	Not started
Training - Gender based violence	Trainers	Not started
Training - TB	Trainers	Not started
Training - WASH	Trainers	Not started
Stakeholder engagement		
Orientation meeting	Program Manager	Not started
Quarterly meetings	Program Manager	Not started
Newsletter updates	Program Manager	Not started

Dependencies

- Assign tasks in order of dependencies
- Look for parallel development opportunities
- Find a balance in size of staff and length of time for project
- Groups of 10 are a good size to limit to



Cost and time estimate

- You now know
  - What tasks need to be done
  - How long each task takes
  - The order of tasks based on dependencies
  - Who is doing each task
- From this you can give a time and cost estimate (based on what you are paying people)

* Software development			
Contractor labor estimate	3000	$150	$450,000
Project team member estimate	1920	$75	$144,000
Total labor estimate			$594,000
Function point estimate	Quantity	Conversion Factor	Function Points
External inputs	10	4	40
External interface files	3	7	21
External outputs	3	5	15
External queries	3	4	12
Logical internal tables	6	10	60
Total function points			148
Java 2 languange equivalency value			46
Source lines of code (SLOC) estimate			6,808
Productivity *KSLOC^Penalty (person months)	30.266		
Total labor hours (160 hours/month)	4,842.551		
Cost/labor hour ($120/hour)	$120		
Total software development estimate	581,106.09		