

Develop WBS Dictionaries

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Plan, Direct, Control Project

PMGT 614

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Develop WBS Dictionaries

This Work Breakdown Structure (WBS) dictionary was developed to meet the requirements of the project proposed on Appendix D of the Practice Standard for Work Breakdown Structures (Project Management Institute, 2006).

This dictionary provides detailed information about the projects deliverables, activities, and scheduling (PMI, 2013). The main purpose of this document is to support the WBS by providing the reader a complete understanding of what is being accomplished on each task and the criteria to consider it completed.

Figure 1 provides a tree structure view of the WBS proposed for this project.

WBS Detailed Dictionary		
WBS Element No./Name:	1.1 Frame Set	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$3.77	
Travel	\$0.00	
Material	\$75.92	
Subcontracts	\$0.00	
ODC	\$5.00	
Total	\$84.69	
<u>WBS Element Description:</u> This is the main product assembly. All subassemblies, hardware, and accessories will be attached to the frame in order to complete the project.		
<u>Activity/Task Descriptions:</u> 1.1.1 Assemble frame. Weld joints. Paint finished product. 1.1.2 Assemble handle bars (grips & clamps). Mount handle bars to fork through frame. 1.1.3 Assemble fork (bolts & chrome closeout pieces). Weld joints. Paint finished product. Lubricate. 1.1.4 Assemble seat (post & clamp). Mount post & seat to frame. Lubricate.		
<u>Key Cost-Driving Assumptions:</u> <ul style="list-style-type: none"> Personalized orders, such as paint might require purchase of additional, unscheduled material. Special trade (welding) required for portions of the assembly 		
<u>Task Entry/Exit Criteria:</u> <ul style="list-style-type: none"> Task 1.6 must be completed. Exit Criteria: All elements (1.1.1 – 1.1.4) must be completed prior to beginning of next task (1.2) 		

DEVELOP WBS DICTIONARIES

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				Labor Hours By Labor Category							
Labor Hours	Detailed Schedule Activities/Task Descriptions	Start Date or predecessor	Estimated Duration	Welder	Painter	Tech	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource
1	1.1.1 Frame		0.28	0.7	1.5						
2	1.1.2 Handle Bar	1.1.3	0.03			0.2					
3	1.1.3 Fork	1.1.1	0.18	0.4	0.8	0.2					
4	1.1.4 Seat	1.1.1	0.03			0.2					
	Total Hours		0.52								
	Labor Rate		\$7.25								
	Total Cost by Labor Category		\$3.77								
Travel	Purpose/Activity		Travel Dates	Location	No. Trips	No. travelers	Per Diem	Hotel	Airline/ Car	Rental Car	Est. \$\$\$
1	NOT REQUIRED		-	-	-	-	-	-	-	-	-
Materials	Item Description/Activity			Vendor	Qty	Unit Price	Total \$	Lead Time	Del Date		Est. \$\$\$
1	Bike Frame			Toto	1	\$39.99	\$39.99				\$39.99
2	Handle Bar			Orbea	1	\$5.97	\$5.97				\$5.97
3	Fork			Marin	1	\$22.46	\$22.46				\$22.46
4	Seat			FSA	1	\$7.50	\$7.50				\$7.50
Subcontract	Task Statement/Activity/SOW Ref.				Contractor	Location	Total \$		Comp. Date		Est. \$\$\$
1											
ODC	Explanation/Activity						Total \$				Est. \$\$\$
1	Hardware						\$5.00				\$5.00

WBS Detailed Dictionary		
<u>WBS Element No./Name:</u>	1.2 Crank Set	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$1.31	
Travel	\$439.00	
Material	\$28.79	
Subcontracts	\$0.00	
ODC	\$5.00	
Total	\$474.10	
<u>WBS Element Description:</u>		
Used to propel the bicycle forward. Connected to the shifting system by a crank arm, pedals, link chain and sprockets. It also changes the resistance of the force needed to move the bicycle.		
<u>Activity/Task Descriptions:</u>		
1.2.1 Assemble pedals to crank arms.		
1.2.2 Assemble bearings to crank arm and frame. Lubricate.		
1.2.3 Assemble crank arms to frame.		
1.2.4 Assemble sprocket to crank arms.		
<u>Key Cost-Driving Assumptions:</u>		
<ul style="list-style-type: none"> • Parts acquired from subcontractors. Shipping fees involved. • Delay on parts delivery or unsatisfactory parts might require additional resources to be used in order to maintain project schedule 		
<u>Task Entry/Exit Criteria:</u>		
<ul style="list-style-type: none"> • Entry: Task 1.1 must be completed prior to the start of this assembly. • Exit Criteria: this task is considered completed when all parts are assembled on the frame and assigned quality controls (inspections, testing) are completed. 		

DEVELOP WBS DICTIONARIES

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				Labor Hours By Labor Category							
Labor Hours	Detailed Schedule Activities/Task Descriptions	Start Date or predecessor	Estimated Duration	Welder	Painter	Tech	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource
1	1.2.1 Pedals		0.03			0.2					
2	1.2.2 Bearings		0.06			0.5					
3	1.2.3 Crank Arms		0.06			0.5					
4	1.2.4 Sprocket (crank arm)		0.03			0.2					
	Total Hours		0.18								
	Labor Rate		\$7.25								
	Total Cost by Labor Category		\$1.31								
Travel	Purpose/Activity		Travel Dates	Location	No. Trips	No. Travlers	Per Diem	Hotel	Airline/ Car	Rental Car	Est. \$\$\$
1	Procurement Negotiations				1	1	\$54.00	\$65.00	\$275.00	\$45.00	\$439.00
Materials	Item Description/Activity			Vendor	Qty	Unit Price	Total \$	Lead Time	Del Date		Est. \$\$\$
1	Pedals			XLC	1 Set	\$14.34	\$14.34				\$14.34
2	Bearings			Sunlite	1	\$6.95	\$6.95				\$6.95
3	Crank Arms			XLC	2	\$7.50	\$15				\$15
Subcontract	Task Statement/Activity/SOW Ref.				Con-tractor	Location	Total \$		Comp. Date		Est. \$\$\$
1											
ODC	Explanation/Activity						Total \$				Est. \$\$\$
1	Hardware						\$5				\$5

WBS Detailed Dictionary		
<u>WBS Element No./Name:</u>	1.3 Wheels	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$0.94	
Travel	\$439.00	
Material	\$38.79	
Subcontracts	\$0.00	
ODC	\$0.00	
Total	\$478.73	
<u>WBS Element Description:</u>		
Wheels provide the means for movement of the bicycle. Wheels are 26" rims by 1.75" width, using standard street tires.		
<u>Activity/Task Descriptions:</u>		
1.3.1 Assemble front wheel (inner tube & tire)		
1.3.2 Assemble rear wheel (inner tube, tire & sprockets)		
<u>Key Cost-Driving Assumptions:</u>		
<ul style="list-style-type: none"> • Wheels to be subcontracted for assembly of hub, spokes, and rim. • Finished product to be chromed for corrosion inhibiting (special skill requirement). 		
<u>Task Entry/Exit Criteria:</u>		
<ul style="list-style-type: none"> • Entry: Task 1.1 must be completed and all material available for assembly. • Exit: The task is considered completed when wheels are properly assembled in their respective frames and assigned quality controls (inspections, testing) are completed. 		

DEVELOP WBS DICTIONARIES

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WBS Detailed Dictionary														
<u>WBS Element No./Name:</u>	1.4 Braking System	<u>Date:</u> 08 June 2017												
<u>Author/Organization:</u>														
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221												
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet) <table> <tr> <td>Labor</td> <td>\$1.31</td> </tr> <tr> <td>Travel</td> <td>\$439.00</td> </tr> <tr> <td>Material</td> <td>\$16.98</td> </tr> <tr> <td>Subcontracts</td> <td>\$0.00</td> </tr> <tr> <td>ODC</td> <td>\$0.00</td> </tr> <tr> <td>Total</td> <td>\$457.29</td> </tr> </table>			Labor	\$1.31	Travel	\$439.00	Material	\$16.98	Subcontracts	\$0.00	ODC	\$0.00	Total	\$457.29
Labor	\$1.31													
Travel	\$439.00													
Material	\$16.98													
Subcontracts	\$0.00													
ODC	\$0.00													
Total	\$457.29													
<u>WBS Element Description:</u> Brake systems are installed on front and rear wheels. Each wheel has a separate handle and operates independently. Left lever activates rear brakes and right lever activates forward brakes. The brake system consists of cables, levers, pads, and calipers.														
<u>Activity/Task Descriptions:</u> 1.4.1 Assemble Levers and Controls (hand brake controls. Attach cable to lever control.) 1.4.2 Attach cables (mount to frame and handlebars). 1.4.3 Brake pads and brake calipers (mount calipers to frame (front and back), mount pads to calipers. Attach cables to calipers.														
<u>Key Cost-Driving Assumptions:</u> <ul style="list-style-type: none"> • Parts acquired from subcontractors. Shipping fees involved. • Delay on parts delivery or unsatisfactory parts might require additional resources to be used in order to maintain project on schedule • Special skill (labor) required for brake assembly and rigging. 														
<u>Task Entry/Exit Criteria:</u> <ul style="list-style-type: none"> • Entry: Task 1.3 must be completed prior to initiating this task. • Exit: Task is completed when brake system (levers, cables, calipers, mount pads) is installed, cables are rigged to specific standards and assigned quality controls (inspections, testing) are completed. 														

DEVELOP WBS DICTIONARIES

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WBS Detailed Dictionary		
<u>WBS Element No./Name:</u>	1.5 Shifting System	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$1.67	
Travel	\$439.00	
Material	\$17.11	
Subcontracts	\$0.00	
ODC	\$0.00	
Total	\$457.78	
<u>WBS Element Description:</u>		
Contains a system with multiple sprockets providing a variable-ratio of resistance when pedaling the bicycle. It is attached to a shifter located on the handlebars by the brake system. On bicycles that have multiple sprockets attached to the crank arms, two shift mechanisms will be available. The one on the left system will move the chain on the forward sprockets, and the mechanism located on the ride side of the handlebar will move the rear sprockets.		
<u>Activity/Task Descriptions:</u>		
1.5.1 Attach Derailers to front and rear frame to move chain between sprockets. Attach shift control cables.		
1.5.2 Attach shift control Cables to frame.		
1.5.3 Mount control Levers to frame. Attach cable to control arm. Calibrate both front and rear controls.		
<u>Key Cost-Driving Assumptions:</u>		
<ul style="list-style-type: none"> • Front and rear Derailers will be purchased in a preassembled state. Our company does not have the expertise to produce the rear derailleur due to the close tolerance micro bearings. • Control cable prices will be reduced for every lot of 100. The estimated acquisition price of the cables for the estimated build quantity is \$4.24 per set. • Calibration of the derailleurs to prevent chain derailment and jamming past the usable limits will have a cost reduction in labor as the technicians become more familiar with the task and possible shortcuts. 		
<u>Task Entry/Exit Criteria:</u>		
<ul style="list-style-type: none"> • WBS Element is considered complete when the processes are created that will mount the shifting mechanisms and controls to the frame and are calibrated for use. • The wheels and sprockets must be mounted to the frame prior to entry into this WBS element. 		

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WBS Detailed Dictionary		
<u>WBS Element No./Name:</u>	1.6 Integration	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$91.25	
Travel	\$1649.00	
Material	\$0.00	
Subcontracts	\$0.00	
<u>ODC</u>	<u>\$0.00</u>	
Total	\$1740.25	
<u>WBS Element Description:</u>		
Collection of ideas, through brainstorm sessions, market research, and subject matter experts to be used to design the product. Development of Assembly instructions, standards, and policies that will be used during the manufacturing of the product.		
<u>Activity/Task Descriptions:</u>		
1.6.1 Concept		
1.6.2 Design		
1.6.3 Assembly		
1.6.4 Testing		
1.6.4.1 Component testing		
1.6.4.2 Product testing		
1.6.4.3 Customer testing		
<u>Key Cost-Driving Assumptions:</u>		
<ul style="list-style-type: none"> • Concept, Design, and Testing should be a onetime project cost allowing the relatively high task cost to be absorbed over the life cycle of the project. • Testing will not take more than two weeks to complete and no redesign will be needed. 		
<u>Task Entry/Exit Criteria:</u>		
<ul style="list-style-type: none"> • The integration task is the project's kick-off task. • All other tasks may begin once the testing phase has been successfully completed. 		

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WBS Detailed Dictionary														
<u>WBS Element No./Name:</u>	1.7 Phone Dock	<u>Date:</u> 08 June 2017												
<u>Author/Organization:</u>														
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221												
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet) <table> <tr> <td>Labor</td> <td>\$69.96</td> </tr> <tr> <td>Travel</td> <td>\$439.00</td> </tr> <tr> <td>Material</td> <td>\$6.16</td> </tr> <tr> <td>Subcontracts</td> <td>\$0.00</td> </tr> <tr> <td>ODC</td> <td>\$0.00</td> </tr> <tr> <td>Total</td> <td>\$515.12</td> </tr> </table>			Labor	\$69.96	Travel	\$439.00	Material	\$6.16	Subcontracts	\$0.00	ODC	\$0.00	Total	\$515.12
Labor	\$69.96													
Travel	\$439.00													
Material	\$6.16													
Subcontracts	\$0.00													
ODC	\$0.00													
Total	\$515.12													
<u>WBS Element Description:</u> Consists of a handlebar attachment, the phone support and include all the system components giving the rider the ability to connect the phone to the wireless speaker for hands-free capabilities.														
<u>Activity/Task Descriptions:</u> 1.7.1 Mount 1.7.2 Power Supply 1.7.3 Bluetooth														
<u>Key Cost-Driving Assumptions:</u> <ul style="list-style-type: none"> • The sound dock will be procured from an electronics manufacturer and will meet current industry accepted Bluetooth protocols. Our company does not have the expertise, resources, or time required to develop this product in house. Unit price for procurement must be limited to no more than \$10 per unit cost to make this item break even at the 25% mark of the planned manufacturing quantity. • The power supply is integral to the speaker dock design and is small enough to prevent interference with the bicycle's controls and operations. • A mount must be made that will prevent interference with any of the bicycle's controls or operation. The mount must secure the speaker dock and phone to prevent accidental loss of either during rough terrain riding. 														
<u>Task Entry/Exit Criteria:</u> <ul style="list-style-type: none"> • Task started after the bicycle has completed assembly. This affords individual quality control verification that the speaker dock will not interfere with normal operation. 														

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WBS Detailed Dictionary		
<u>WBS Element No./Name:</u>	1.8 Project Management	<u>Date:</u> 08 June 2017
<u>Author/Organization:</u>		
<u>Email Address:</u> ronald.carns@earthlink.net		<u>Phone:</u> 254-368-1221
<u>Estimate Summary:</u> (Fill out using data from attached detailed worksheet)		
Labor	\$75.70	
Travel	\$1649.00	
Material	\$0.00	
Subcontracts	\$0.00	
ODC	\$0.00	
Total	\$1724.70	
<u>WBS Element Description:</u>		
All the controlling elements to successfully complete the project		
<u>Activity/Task Descriptions:</u>		
1.8.1 Initiation Phase		
1.8.2 Preliminary Project Plan		
1.8.3 Planning		
1.8.4 Deployment/Production		
1.8.5 Closeout		
<u>Key Cost-Driving Assumptions:</u>		
<ul style="list-style-type: none"> • Project Management techniques will help control costs and schedule through active management and metrics. • Best practices will identify problems early allowing project course corrections to be effective. 		
<u>Task Entry/Exit Criteria:</u>		
<ul style="list-style-type: none"> • Entry: Organization's upper management approval • Exit: Task is considered completed when a determination is based for each element, concept and design is approved, and assembly is completed. 		

				Labor Hours By Labor Category							
Labor	Detailed Schedule Activities/Task Descriptions	Start Date or predecessor	Estimated Duration	Project Management Team	Tech	Design Engineer	Market Analyst	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource	Position /Skill/ Resource
1	1.8.1 Initiation Phase		1.88	15.0							
2	1.8.2 Preliminary Project Plan	1.8.1	5.63	5		30	10				
3	1.8.3 Planning	1.8.2	0.63	5							
4	1.8.4 Deployment/Production	1.8.3	6.25	20	20	5	5				
5	1.8.5 Closeout	1.8.4	0.75	2		2	2				
	Total Hours		15.14								
	Labor Rate		\$5								
	Total Cost by Labor Category		\$75.70								
Travel	Purpose/Activity		Travel Dates	Location	No. Trips	No. travelers	Per Diem	Hotel	Airline/ Car	Rental Car	Est. \$\$\$
1	Product Development			HQ	3	3	\$54.00	\$575.00	\$895.00	\$125.00	\$1649.00
Materials	Item Description/Activity			Vendor	Qty	Unit Price	Total \$	Lead Time	Del Date		Est. \$\$\$
1											
2											
Subcontract	Task Statement/Activity/SOW Ref.				Contractor	Location	Total \$		Comp. Date		Est. \$\$\$
1											
2											
ODC	Explanation/Activity						Total \$				Est. \$\$\$

References

Project Management Institute (PMI). (2013). *A guide to the project management body of knowledge (PMBOK® guide) (5th ed.)*. Newton Square, Pa: Project Management Institute.

Project Management Institute (PMI). (2006). *Practice Standard for Work Breakdown Structures* (2nd ed.). Newton Square, Pa: Project Management Institute.

DEVELOP WBS DICATIONARIES

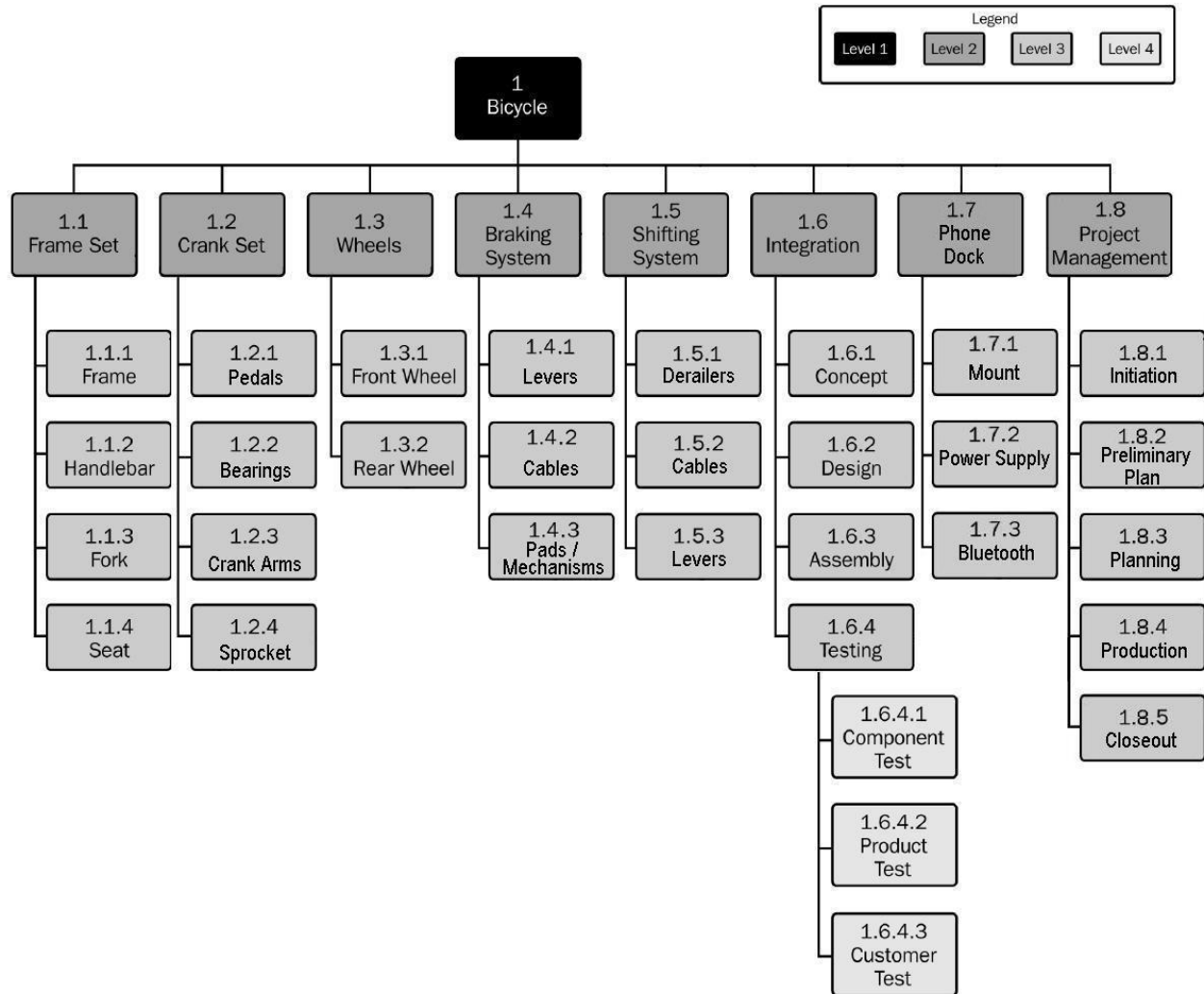


Figure 1-Tree Structure WBS