

## Scope planning

Project success is determined by its usefulness or profitability:

- in increase of revenue
- in savings of costs

The main reason to change existent information system is to get more benefits to organization, to help more to achieve its strategic goals obtainable benefits must be expressed in information system (new, changed) goals

## IS Project System Model

Is presented on the next figure:

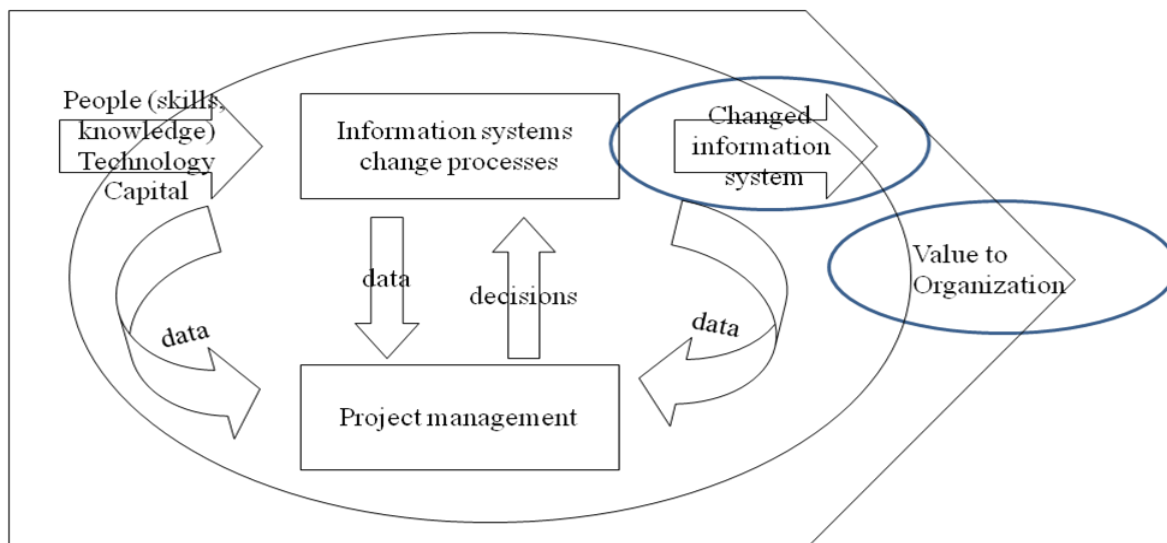


Figure 1. Project System Model

## Scope and its management

The main question to project is: “are we doing the RIGHT thing?”. Nobody wants to find itself in situation where client says: “but I thought, I was getting “X”!”. With answering to this question deals scope management including scope planning and controlling scope against (quantitative) changes.

In scope planning we must define, write down and get clients agreement for 2 things: to “breadth” of expected deliverables – product (hereby system) scope and to “depth” of expected deliverables – project scope

## Product Scope

In defining scope of project deliverables we must agree with project stakeholders (customer and performer) and write down unambiguously following aspects:

- what product, service, or result will do

- how the product, service, or result will be used
- how the product, service, or result will function
- what the product will look like, what the service is, or what the result will be
- what impact the product, service, or result will have on the organization, customer, stakeholders, and business processes
- any constraints, restrictions, standards, regulations, and other requirements related to the product

Pictorially:

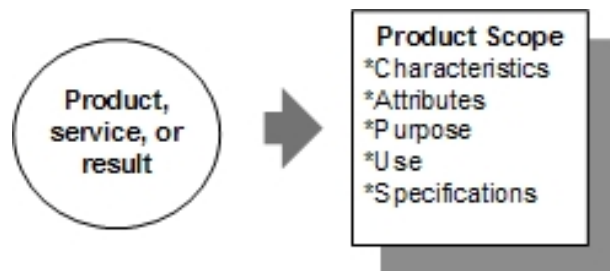


Figure 2. Product scope

## Project Scope

Project scope deals with how one or another expected deliverable will be created and delivered to customer. It deals with deliverables and project management documentation describing all the work we must accomplish to achieve project goals. Depending on customer technical experience, documentation can be more or less complex or formal, for example:

- data model where are shown main data entities with relations or logical data model where data are normalized with 3. normal form
- application specification which consists of manually written sentences on paper or of to the very last elaborated diagram showing program structure

Different choices demand different amount of work

Additionally – in context of system development, project scope is dictated from system development methodology determining, what kind of documentation is needed, in which sequence and content. With project scope we must determine, what kind of methodology customer uses and how strictly it will be followed. If client considers that following methodology is costly, even so it is necessary to follow it in appropriate level when to consider project success.

Pictorially:

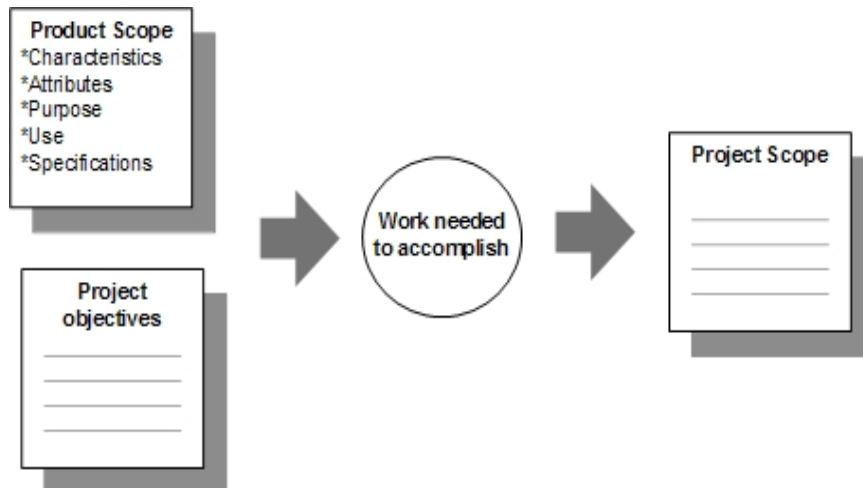


Figure 3. Project scope

In context of system development project scope includes:

- customer products (things what customer needs for useful system, in addition to program code also user manuals, help files, installation scripts and guides)
- process artifacts (things what development team during development creates, for example use case specifications, design documentation etc)
- internal deliverables (things having value to development organization – development results consisting intellectual value, for example requirements documentation templates, test plans etc)
- services (work what is expected in addition to delivered product or development of another results, for example training, consultation, installation, onsite support and adaptation to customer)

Scope of changeable information system– amount of aspects or range of IS architecture (what will be in and out of borders) affected with change including:

- quantity of IS goals
- quantity of IS processes
- quantity of actors in IS
- quantity of functional/non-functional requirements
- quantity of data entities
- quantity of locations

Scope planning in PMBOK

Is presented on the next figure:

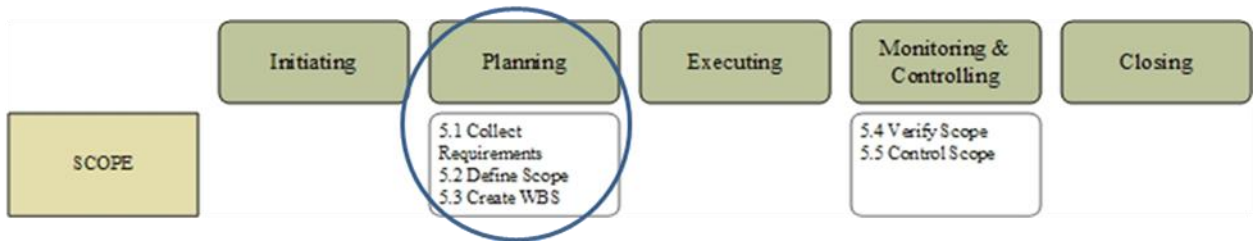


Figure 4. Scope management and specifically scope planning processes in PMBOK

Scope planning steps are as follows:

1. collecting requirements
2. defining scope
3. creating work breakdown structure (WBS)

These steps are more specifically presented on the next figure:

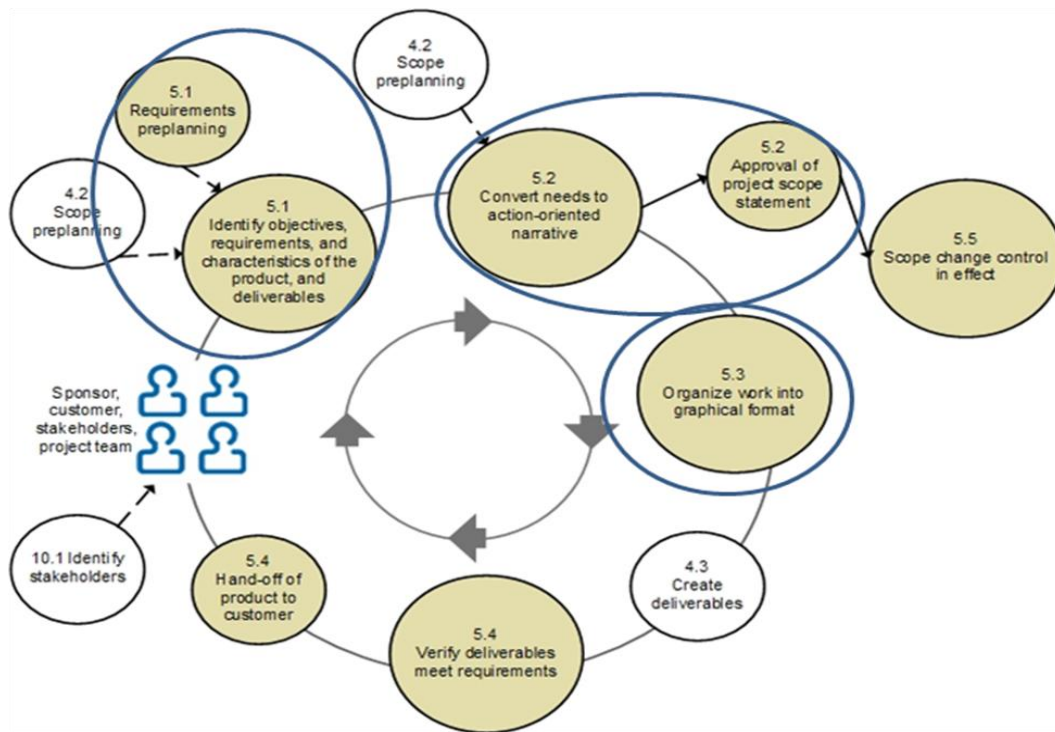


Figure 5. Scope planning steps

### Scope planning 1. step – requirements gathering

Many projects start up with vague or ill defined ideas of what they want to achieve. If to hope to deliver a successful project in a finite amount of time, we must 1. set to project a concrete goal and 2. determine the final state our project must achieve. If we have an infinite amount of time we can simply try one solution after another until we hit upon the best solution for our problem. Most of us operate in an environment where we need to deliver a concrete solution in a very finite period of time. Additionally we must select the

best solution from a range of possible approaches. The first and most important step in this process is defining what will actually constitute a success. Then we can evaluate all of the possibilities against our definition of success and find the best fit. The more accurate we can be about defining our objectives; the more likely we will be to succeed.

Scope is a general term to describe everything that our project encompasses – everything that must be achieved for the project to be complete. This would encompass projects vision, goals and requirements. These would be embodied in documents such as a “project proposal” and at a lower level “commercial specifications” and “technical specifications”. Pictorially expressing:

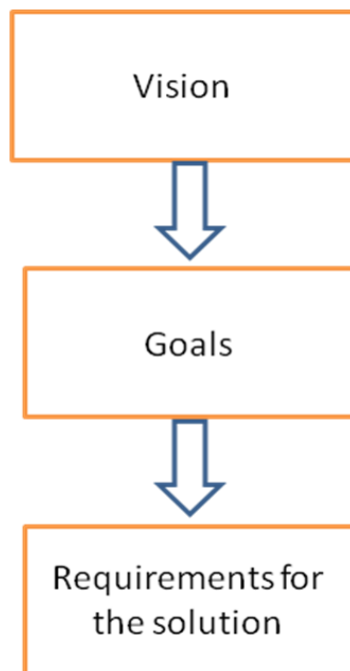


Figure 6. Vision, goals and requirements related to each other

Project vision is bases for defining project goals. These in turn are as “filters” to determination of requirements characterizing expected result (solution).

### Project vision

A single encapsulated idea which defines the aim of our project. It should be stated in a single sentence; it should be inspiring, “visionary”. In additionally it don’t have to be formalized. The only important thing is that every interested party of project know exactly what the vision is and agree on it. Examples of project visions:

- “deliver the cheapest system, in the shortest time, that just about gets the job done”  
or
- “deliver the best sales and marketing system on the market”

Which of these vision statements is inspiring, which of these motivates project team to do their job?

## Project goals

Project goals are slightly lower-level and more specific than the vision. They should directly support the overall vision of the project but refine its definition. Typically goals are set out by customers or by a business and define how the success of the project will be achieved.

Project proposal states the highest level goals in a project; it outlines the overall business goals and vision to the project as decided by the customer or client. It is what gets signed off when a commercial deal is agreed. It may define what we are legally committed to delivering.

While the vision encompasses the whole project, goals may refer only to the objectives of a particular segment of the project.

Examples: “the project should deliver the best Customer, Sales and Marketing system on the market, it should:

- reduce time taken to process sales orders by 50% (of manual process times)
- provide detailed management reports on a quarterly basis
- provide detailed market and customer analysis at request
- link sales directly to marketing initiatives to measure marketing ROI
- provide detailed client and prospect information to account managers
- completely automate license renewals via a website
- provide a zero-footprint client, accessible via the Internet
- provide an upgrade path for users of other sales order systems”

Some goals are more specific than others. More detail is the purpose of requirements specification. The goal is to spend enough time to make sure project goals are accurate and succinct; it will be the yardstick against which senior management will judge the success of our project.

## Requirements to expected solution

One of the primary purposes of goals is to act as a filter for subsequent requirements. If a particular requirement cannot be traced back through higher-level goals to the overall project vision then it should be dropped since it will be outside the scope of the project

Requirements specification is the process of refining the goals of a project to decide what must be achieved to satisfy the “customers”. Generally requirements divide into 2 types: functional and non-functional requirements.

Functional requirement typically states as “the system X must perform function Y”. It asserts or affirms a necessary or desirable behavior for the system or product in the eyes of an end user.

Non-functional requirement specifies requirement associated with usability, security, performance, reliability etc

Requirement definition must meet SMART requirements; they must be specific, measurable, achievable, relevant and testable

## Risks associated with deliverable uncertainty

At first sight seems that definition of deliverables is simple. Customer wants amount of models, technological architecture or application system, which consists of code and documentation. Creating these things may be difficult, defining these things seems easy. Unfortunately in projects world simplicity leads to abyss. Problems rise from seemingly safe requirements. For example: “new warehouse system will simplify financial data processing for accounting system”. This can mean, that ...

- “new system will output reports where are shown summary data, what must be enter manually to account system” or
- “new system will in the end of every month generate data file, which will transported to account system” or
- “account systems database will be updated from warehouse system online”

Work what must be carried out corresponding these interpretations is different. When project manager plans as solution reports in the month end, but customer wants online updating, then trouble is in house.

Conclusion: before beginning development work we must understand not only what all these requirements mean, but also, what customer thinks, what these requirements mean

## 2. Step – scope defining

Scope defining is creating project scope statement. If something isn't described within the detailed project scope statement then the work should not be done or the scope statement needs revised to include the work

Project scope statement should consist at least following components (they may be written in separate documents):

- Product scope: The characteristics of the product, service, or result for which the project was undertaken. In projects that are part of a larger program, the project itself may only be creating components of the product, but the product scope or product description is still necessary so that everyone knows what the overall objective is.
- Project objectives: Objectives are the success metric for the project. Specifically, what will it take for the project to be considered successful? This includes the business, cost, schedule, technical, and quality objectives, and other specific targets should be included where applicable.
- Project requirement: The capabilities that the product, service, or result must possess and meet. Requirements are the translated expectations and needs of the stakeholders into prioritized, descriptive requirements and work items.
- Project exclusions: Nearly just as important as what IS in the project, the scope should include items that are excluded from the project. Doing this helps eliminate any confusion within the stakeholders or project team.
- Project deliverables: The core product, service, or result should be fully described, as well as any ancillary deliverables. Any needed project artifacts, those documents not directly related to the deliverables, such as management, technical, or status reports, should also be described.
- Product acceptance criteria: The process and criteria for product acceptance should be defined. This includes customer-specific requirements and any testing or other threshold limits.
- Project constraints: Any limiting factors the project must work within, such as deadlines, budget, staffing, facilities, equipment, materials, or contractual restraints, should be described.
- Project assumptions: Every project has assumptions, and these should be described because assumptions are risk factors.
- Risks: Risks should be identified at least at a high level. The risk register is where all risks are logged, but having major risks explained in the scope statement helps make everyone aware and on the lookout for them.
- Milestones: Any important dates, including deliverable- or artifact-oriented dates should be included in the project scope statement.
- Approval requirements: Any specific approval requirements for items such as deliverables, documents, and work should be described.

### 3. Step - creating Work Breakdown Structure



Deliverables-oriented, graphical, hierarchical representation of the work required to fulfill the project scope statement. Purposes:

- it subdivides the work into manageable components that can be scheduled, estimated, and assigned
- through the process of creating and updating the WBS, it helps to identify needed work that might otherwise not have not been discovered until later
- it can be used as a visual communication tool for the customer, stakeholders, and project team
- the WBS is an input to activity definition, cost estimating, cost budgeting, resource planning, and risk management planning

### WBS Design Principles

- Project scope is divided into manageable components in terms of size, duration, and responsibility (e.g., systems, subsystems, components, tasks, subtasks, and work packages) which include all steps necessary to achieve the objective – result is hierarchy or tree
- WBS includes 100% of the work defined by the project scope and captures ALL deliverables – internal, external, interim – in terms of the work to be completed, including project management
- The sum of the work at the “child” level must equal 100% of the work represented by the “parent”
- WBS should not include any work that falls outside the actual scope of the project, that is, it cannot include more than 100% of the work...
- It is important that there is no overlap in scope definition between two elements of a Work Breakdown Structure

Example of WBS:

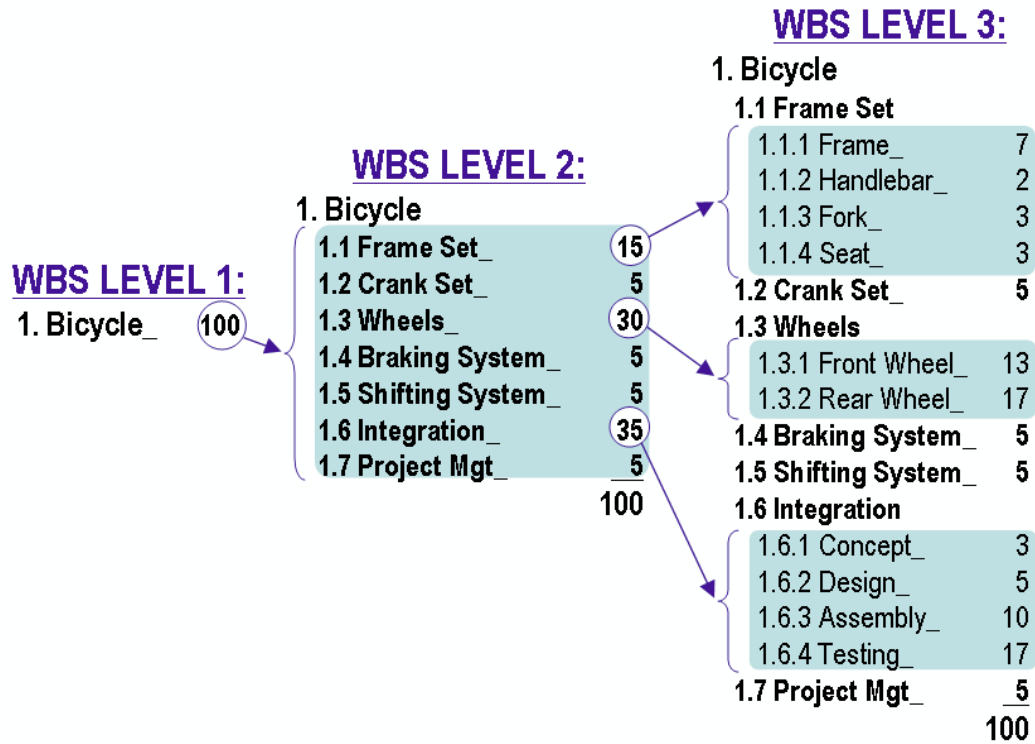


Figure 7. Example of bicycle work breakdown structure

### Agile approach to scope planning

Agile scope planning consists of 5 layers:

- Product Vision
- Product Roadmap
- Release Plan
- Sprint Plan
- Daily Commitment

### Release and sprint planning

Is presented on the next figure:

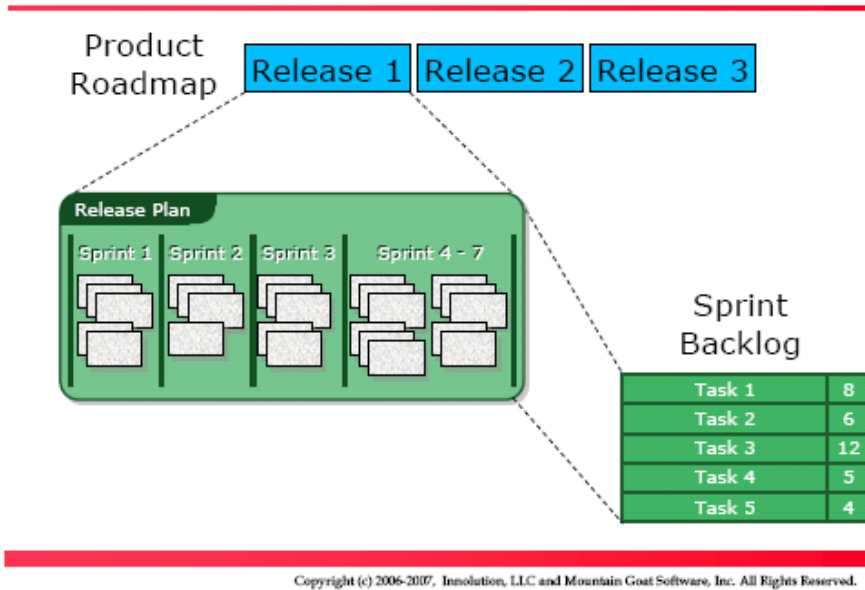
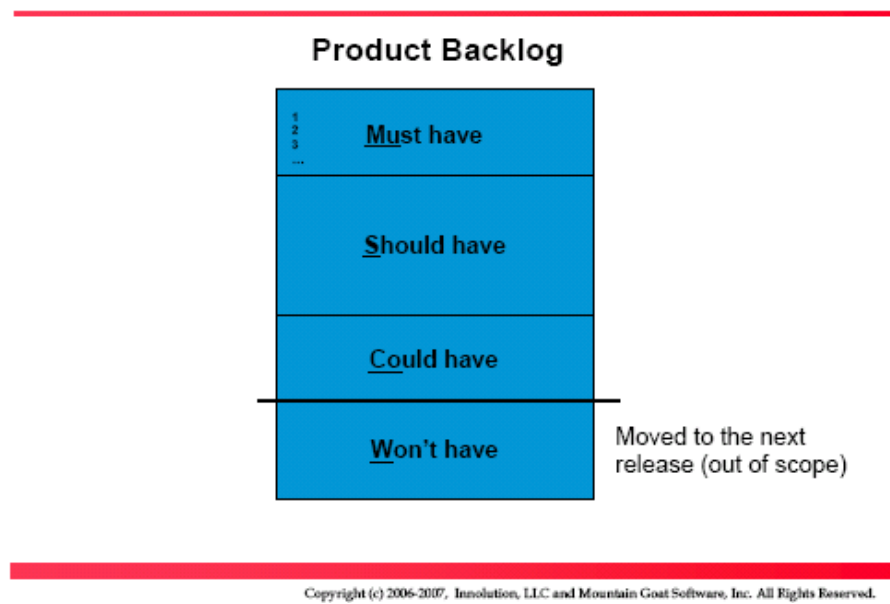


Figure 8. Decomposition of expected result with agile approach

The whole system is decomposed and described in product roadmap. It divides expected deliverable in various releases. Work concerning every release is divided in sprints. Every sprint contains tasks what are necessary to accomplish to achieve determined part of one or another release.

### Feature Prioritization Method – MuSCow

This method is presented on the next figure:



Joonis 9. Feature Prioritization Method - MuSCow

## Used literature

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- WBS examples
  - [http://en.wikipedia.org/wiki/Work\\_breakdown\\_structure](http://en.wikipedia.org/wiki/Work_breakdown_structure)
  - WBS Review, [http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/plan99/2%20Day%200%20Sessions%20for%20update/P2%20Intro%20to%20WBS%20Development\\_R26.ppt](http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/plan99/2%20Day%200%20Sessions%20for%20update/P2%20Intro%20to%20WBS%20Development_R26.ppt)