

5 Easy Steps to **Validating** Requirements



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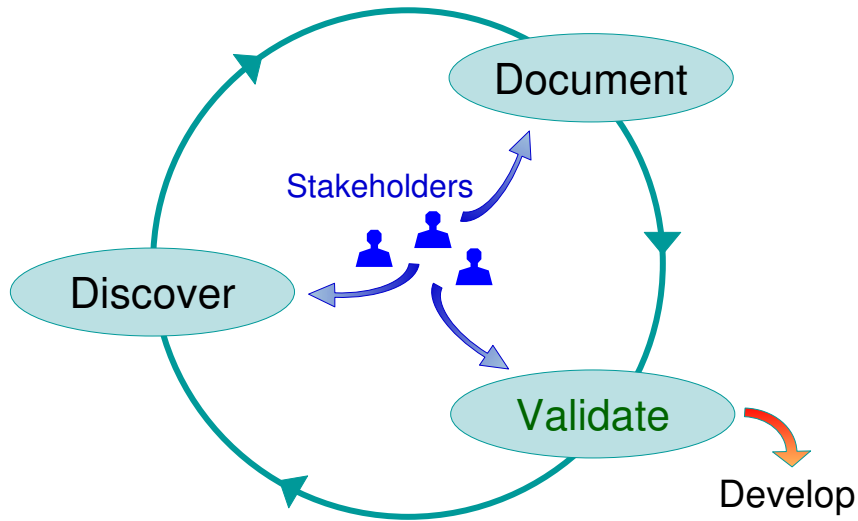
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Poll (Vote)

Do you validate requirements :

1. only informally?
2. only by formal review / walkthrough?
3. by combining several different methods?

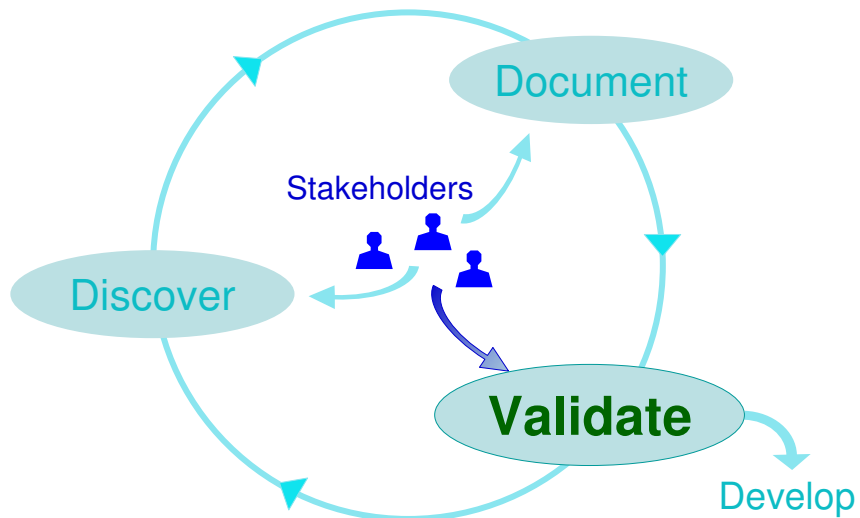
Creating Requirements



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3

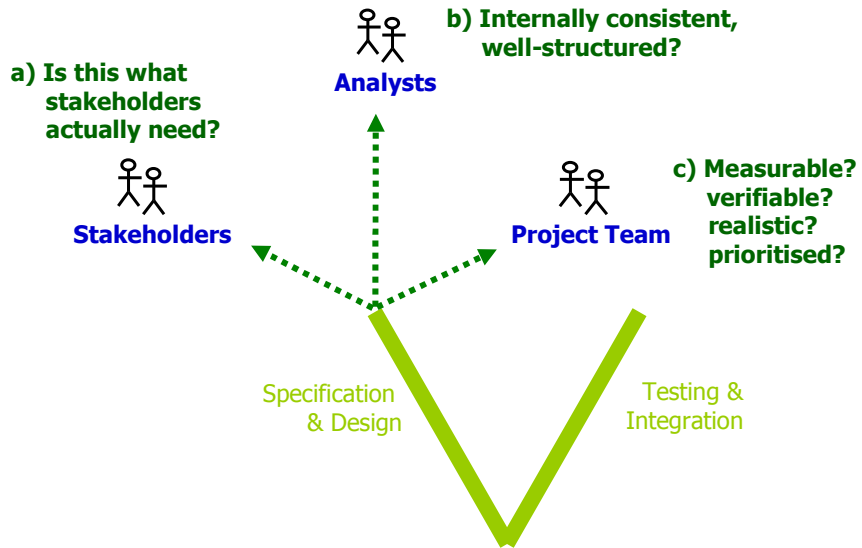
Validating Requirements



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4

Validation

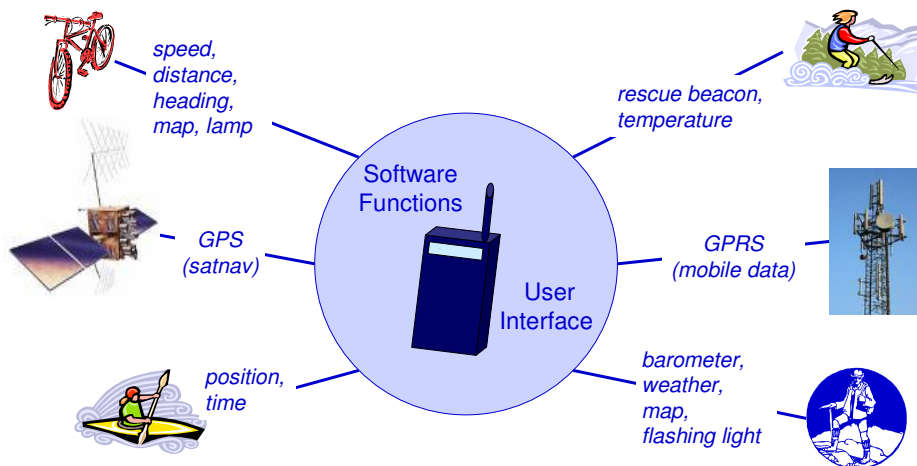


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5

Context

We're creating an embedded-software device to be useful to every outdoor leisure activity



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6

A Few *Draft* Requirements...

Functions

It would be helpful to provide a barometric pressure display.
An emergency light should be built in, unless this is too large and heavy.

The system must include a rescue beacon for skiing, etc.

MFD* should be able to issue weather warnings.

As it may be difficult to find batteries, MFD must be able to recharge them.

Qualities & Constraints

MFD shall be shockproof.

MFD shall be waterproof.

MFD must be light to carry.

MFD must be small and convenient.

MFD should be easy to use.

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* *The Multi-Function Device*

7

These may *LOOK* all right...

- *But how do we tell?*
- Choose *independent* ways of checking:
 1. Grammar & Syntax
 2. Missing Measurements
 3. One-off Terms
 4. Conflicts
 5. CRUD check

... ..

Plenty more options ...

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8

1. Grammar & Syntax

It **would** be **helpful** to **provide** a barometric pressure display.

provide is vague.
What should it do?

An emergency light should be built in, **unless** this is too large and heavy.

Get out clause,
so, not necessary?

The system must include a rescue beacon for skiing, **etc.**

etc = for example!
so, not necessary?

MFD **should** be able to issue weather warnings.

As it **may** be **difficult** to find batteries, MFD must be able to recharge them.

would, helpful, should, may
so, not necessary?

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9

2. Missing Measurements

MFD shall **display** barometric pressure.

To what accuracy?

MFD shall be **waterproof**.

To what depth?

MFD must be **light to carry**.

What limit on mass?

MFD should be **easy to use**.

How much training?
With gloves on?

MFD must be **small** and **convenient**.

What limits on size?

Grammar: **and**
Is this 2 requirements?

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10

3. One-off Terms

MFD shall display **barometric pressure**.

These terms each occur **only once**

An **emergency light** should be built in, unless this is too large and heavy.

Should they be in Goals?

The system must include a **rescue beacon** for **skiing**, etc.

Should they be in Scenarios?

MFD should be able to issue **weather warnings**.

Should they be in Project Dictionary?

As it may be difficult to find **batteries**, MFD must be able to **recharge** them.

Are any of them Synonyms?

4. Conflicts

MFD **shall** display barometric pressure.

An emergency light **should** be built in **unless** this is too large and heavy.

Internal conflict?

As it **may be difficult** to find batteries, MFD **must** be able to recharge them.

Possible external conflicts, if **mass, power, size, development cost** limit no. of functions

5. CRUD check

- Data elements can be

- Created
- Retrieved
- Updated
- Deleted

Retrieve data
to display it

So where is it Created?
When is it Deleted?

MFD shall display barometric pressure.

Retrieve data
to issue warnings

So warnings Created how?
From barometric data only?

MFD shall be able to issue weather warnings.

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13

CRUD Scenario

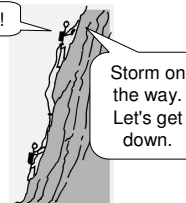
More detailed,
System-level
requirements

- **Create data**
 - MFD **measures** barometric pressure at intervals of t seconds, **storing** it in data buffer.
 - MFD **calculates** rate of change of pressure.
- **Retrieve data**
 - When user requests barometer, UI **displays** current pressure.
 - When pressure is *falling rapidly*, UI **displays** Storm Warning.
- **Update data**
 - (Measurements are not edited, but overwritten when buffer is full.)
- **Delete data**
 - MFD **discards** pressure readings more than 3 hours old.

"When" style for
event-handling
requirements

Term defined in
Project Dictionary

Beep!



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14

Finally, Requirements

Functions

- MFD shall display barometric pressure accurate to 1 millibar.
- MFD shall supply at least 5 minutes of emergency light.
- MFD shall transmit digital avalanche beacon signals on demand.
- MFD shall issue a storm warning when barometric pressure falls rapidly.
- MFD shall issue weather warnings when available from local radio.
- MFD shall be rechargeable in the field without additional equipment.

Qualities & Constraints

Qualities

- MFD shall be shockproof to BSI Standard 123456.
- MFD shall be waterproof to BSI Standard 654321.

Physical Constraints

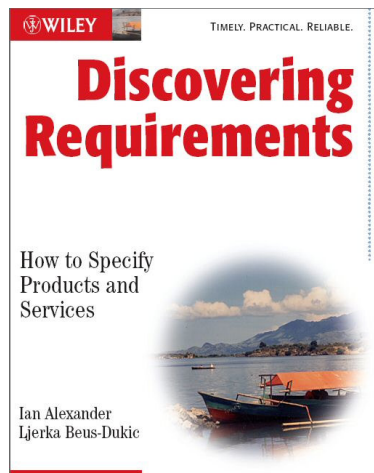
- MFD shall weigh no more than 400 grams.
- MFD's dimensions shall be no more than 15cm x 10cm x 4 cm.

Usability

- MFD shall be operable with thermally-gloved hands.



Finding out more...



<http://www.scenarioplus.org.uk>