

The Power of Unknowns

*Harnessing what you don't know
to estimate project duration*

John Keklak
Software Development Institute
john@keklak.com

The Power of Unknowns

*Harnessing what you don't know
to **estimate project duration***

John Keklak
Software Development Institute
john@keklak.com

About me

John Keklak

Software Development Institute

john@keklak.com

About me

+ Software developer for >30 years

About me

- + Software developer for >30 years
- + Taught software engineering at BU for 9 years

About me

- + Software developer for >30 years
- + Taught software engineering at BU for 9 years
- + **Still do a lot of software development**

About me

- + Software developer for >30 years
- + Taught software engineering at BU for 9 years
- + Still do a lot of software development
- + **Privately mentor aspiring software developers**

About me

- + Software developer for >30 years
 - + Taught software engineering at BU for 9 years
 - + Still do a lot of software development
 - + Privately mentor aspiring software developers
- = **Software Development Institute**

Boston University

CS411 Software Engineering

John Keklak

Software Development Institute

john@keklak.com

BU CS411 Project Success

John Keklak

Software Development Institute

john@keklak.com

BU CS411 Project Success

The early years...



BU CS411 Project Success

Later years...



BU CS411 Project Success

Later years...



What changed?

Focus on

John Keklak

Software Development Institute

john@keklak.com

Focus on
UNKNOWNNS

What's an "unknown"?

What's an "unknown"?

+ What the customer wants

What's an "unknown"?

- + What the customer wants*
- + What the UI should look like*

What's an "unknown"?

- + What the customer wants*
- + What the UI should look like*
- + How to do various technical things*

What's an "unknown"?

- + What the customer wants*
- + What the UI should look like*
- + How to do various technical things*

"Things developers don't know"

What's an "unknown"?

For legacy projects, unknowns also include:

What's an "unknown"?

For legacy projects, unknowns also include:

+ What the existing code does

What's an "unknown"?

For legacy projects, unknowns also include:

- + What the existing code does*
- + What causes a particular bug*

What's an "unknown"?

For example:

What's an "unknown"?

For example:

What I don't know is...

What's an "unknown"?

For example:

What I don't know is...

...how to save data in a MySQL database.

What's an "unknown"?

Unknowns can be abbreviated as...

What's an "unknown"?

Unknowns can be abbreviated as...

WIDKI...

What's an "unknown"?

Unknowns can be abbreviated as...

WIDKI...

"What I don't know is..."

What's an "unknown"?

Unknowns can be abbreviated as...

WIDKI...

"What I don't know is..."

UNKNOWNNS are...

For example:

UNKNOWNNS are...

For example:

WIDKI...

UNKNOWNNS are...

For example:

WIDKI...

...how to save data in a MySQL database.

**My students were much more successful
when they focused on unknowns!**



Last year's talk provides an overview of unknowns

Last year's talk provides an overview of unknowns

+ Video of presentation is on YouTube
-- search for "The Power of Unknowns"

Last year's talk provides an overview of unknowns

- + Video of presentation is on YouTube
-- search for "The Power of Unknowns"*
- + PDF is on <http://boston-spin.org>
-- look in "Library" page*

Last year's talk provides an overview of unknowns

+ Email me for a PDF of a related article

Estimating with Unknowns

Estimating with Unknowns

Get project assignment

Estimating with Unknowns

Get project assignment



Identify what you don't know

Estimating with Unknowns

Get project assignment



Identify what you don't know
(there's lots; be as thorough as you can)

Estimating with Unknowns

Get project assignment



Identify what you don't know
(there's lots; be as thorough as you can)



Estimate the time needed to resolve each unknown

Estimating with Unknowns

Get project assignment



Identify what you don't know
(there's lots; be as thorough as you can)



Estimate the time needed to resolve each unknown
(decompose if you can't comfortably estimate)

Estimating with Unknowns

Get project assignment



Identify what you don't know
(there's lots; be as thorough as you can)



Estimate the time needed to resolve each unknown
(decompose if you can't comfortably estimate)



Add up your estimates

*How do you estimate the time
required for an unknown?*

*How do you estimate the time
required for an unknown?*

+ Reduce an unknown to tasks

How do you estimate the time required for an unknown?

- + Reduce an unknown to tasks*
- + Estimate time for each task*

How do you estimate the time required for an unknown?

- + Reduce an unknown to tasks*
- + Estimate time for each task*
- + Add up the total time*

*How do you estimate the time
required for an unknown?*

An example:

*How do you estimate the time
required for an unknown?*

An example:

*Unknown: "WIDKI how to send an email
with a PHP script."*

How do you estimate the time required for an unknown?

An example:

*Unknown: "WIDKI how to send an email
with a PHP script."*

Tasks: ??

How do you estimate the time required for an unknown?

An example:

*Unknown: "WIDKI how to send an email
with a PHP script."*

Tasks: ??

Time required for each task: ??

Types of tasks for resolving unknowns

Types of tasks for resolving unknowns

Talking to customers

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs "on paper"

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs "on paper"

*Creating lots of little programs
to develop programming skills*

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs "on paper"

*Creating lots of little programs
to develop programming skills*

(like how to send an email with a PHP script)

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs "on paper"

*Creating lots of little programs
to develop programming skills*

Getting fluent with existing code

Types of tasks for resolving unknowns

Talking to customers

Iterating through UI designs "on paper"

*Creating lots of little programs
to develop programming skills*

Getting fluent with existing code

Expect to do a lot of such tasks

Types of tasks for resolving unknowns

*****Does NOT involve**

Types of tasks for resolving unknowns

****Does NOT involve
writing final product code****

All tasks are intended for gathering knowledge

All tasks are intended for gathering knowledge

What does it mean to "gather knowledge"?

All tasks are intended for gathering knowledge

What does it mean to "gather knowledge"?

+ To learn what the customer wants

All tasks are intended for gathering knowledge

What does it mean to "gather knowledge"?

+ To learn what the customer wants

+ To learn what the UI should look like

All tasks are intended for gathering knowledge

What does it mean to "gather knowledge"?

+ To learn what the customer wants

+ To learn what the UI should look like

+ To learn how code and data should be structured

All tasks are intended for gathering knowledge

What does it mean to "gather knowledge"?

- + To learn what the customer wants*
- + To learn what the UI should look like*
- + To learn how code and data should be structured*
- + To learn how existing code and data are structured*

So let's get started...

The project I have in mind

The project I have in mind

A facelift for...

The project I have in mind

A facelift for...

...our very own **boston-spin.org** web site!

The screenshot shows the homepage of the Boston@SPIN website. The header is purple with the logo 'Boston@SPIN Software Process Improvement Network' and 'Established September 1992'. A navigation menu on the left includes links for 'Welcome', 'Membership', 'Contact', 'Calendar', 'Sponsors', 'Meetings', 'Jobs', 'Discussions', 'Event Schedule', 'FAQs', 'Library', 'Newsletters', 'Professional', 'Job Search', 'Posting Jobs', and 'SERVICES'. Below the menu are logos for 'MITRE' and 'ELIASSEN GROUP'. The main content area is white and features a 'Welcome to Boston SPIN' section with a 'Special Notice' about meeting in Building C. It also includes a 'Sign up for our monthly meeting announcements' link, a description of the organization as a forum for software process improvement, and a 'Our Next Meeting' section with details for a talk by John Kekiak on September 20, 2016. The meeting details include the topic, date, time, and a schedule of activities like networking with pizza and community announcements.

John Keklak

Software Development Institute

john@keklak.com

The project I have in mind

A facelift for...

...our very own **boston-spin.org** web site!

+ Give it a modern appearance

The screenshot shows the homepage of the Boston@SPIN website. The header features the logo for Boston@SPIN (Software Process Improvement Network) and the MITRE logo. The main content area is titled "Welcome to Boston SPIN" and includes a "Special Notice" about meeting location, a "Directions" link, and a "Monthly Meeting Announcements" link. A detailed meeting announcement is displayed, including the topic "The Power of Unknowns – Harnessing What You Don't Know to Reliably Estimate Software Projects", speaker John Kralak, date Tuesday - September 20, 2016, and time 6:00 PM - 8:30 PM. The announcement lists the event's inclusions (FREE PIZZA, networking, social, and community announcements) and specifies that the event is open to everyone in the industry, government, and academia. The location is listed as The MITRE Cooperative.

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The project I have in mind

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+ Give it a modern appearance

+ Clean it up / reorganize

The screenshot shows the Boston@SPIN website. The header includes the logo "Boston@SPIN Software Process Improvement Network" and the text "Established September 1992". A navigation menu on the left lists "About Us", "Welcome", "Membership", "Contact", "Calendar", "Sponsors", "Meetings", "Not a Meeting", "Site", "Discussions", "Event Schedule", "FAQs/Links", "Library", "Newsletters", "Presentations", "Sponsor Guidelines", "Resources", "Professional", "Job Search", "Posting Jobs", "SPE-List", and "Our Sponsors". The main content area is titled "Welcome to Boston SPIN" and contains a "Special Notice" about meeting location, a "Directions" link, and a "Sign up for our monthly meeting announcements" link. Below this is a "Our Next Meeting" section with details for a meeting on Tuesday, September 20, 2016, at 6:00 PM. The meeting topic is "The Power of Unknowns – Harnessing What You Don't Know to Reliably Estimate Software Projects" by John Kellak. The event includes free pizza and a schedule of activities from 6:00-7:00 (Networking with PIZZA) to 8:15-8:30 (Questions and Answers). The meeting is open to everyone in industry, government, and academia, and is held at the MITRE Cooperative.

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...our very own boston-spin.org web site!

+ Give it a modern appearance

+ Clean it up / reorganize

+ Add some features

The screenshot shows the homepage of the Boston@SPIN website. The header features the logo for Boston@SPIN (Software Process Improvement Network) and the MITRE logo. The main content area is titled "Welcome to Boston SPIN" and includes a "Special Notice" about meeting location, a "Directions" link, and a "Sign up for our monthly meeting announcements" link. A "Our Next Meeting" section provides details for a meeting on Tuesday, September 20, 2016, at 6:00 PM - 8:30 PM. The meeting topic is "The Power of Unknowns - Harnessing What You Don't Know to Reliably Estimate Software Projects" by John Kellak. The event includes free pizza and a schedule of activities from 6:00-7:00 (Networking with PIZZA) to 8:15-8:30 (Questions and Answers). The website footer includes the MITRE logo and the ELIASSEN GROUP logo.

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The project I have in mind

A facelift for...

...our very own **boston-spin.org** web site!

- + Give it a modern appearance
- + Clean it up / reorganize
- + Add some features
- + To be performed by **Boston SPIN members!**

The screenshot shows the Boston@SPIN website. The header includes the logo "Boston@SPIN Software Process Improvement Network" and the text "Established September 1992". A navigation menu on the left lists: Welcome, Membership, Contact, Home, Success, Meetings, Not Meeting, Site, Downloads, About SPIN, and Library. The main content area is titled "Welcome to Boston SPIN" and contains a "Special Notice" with directions to the MITRE Center building. Below this is a "Sign up for our monthly meeting announcements" link. A section titled "Our Next Meeting:" lists details for a meeting on Tuesday, September 20, 2016, at 6:00 PM. The meeting topic is "The Power of Unknowns – Harnessing What You Don't Know to Reliably Estimate Software Projects" by John Kellak. The event includes free pizza and a schedule of activities from 6:00-7:00 (Networking with PIZZA) to 8:15-8:30 (Questions and Answers). The meeting is open to everyone in industry, government, and academia, and is held at the MITRE Cooperative.

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No need for panic!

The screenshot shows the Boston@SPIN website. The header includes the logo "Boston@SPIN Software Process Improvement Network" and the text "Established September 1995". A navigation menu on the left lists sections like "About Us", "Welcome", "Membership", "Contact", "Careers", "Sponsors", "Meetings", "Jobs", "Discussions", "Event Schedule", "FAQs/Help", "Library", "Newsletters", "Professional", "Job Search", "Posting Jobs", and "SPIN-List". Below the menu are logos for "MITRE" and "ELIASSEN GROUP". The main content area is titled "Welcome to Boston SPIN" and contains a "Special Notice" about meeting in Building C, a link to "DIRECTIONS", and information about the organization's purpose and membership. A "Our Next Meeting" section details an event on Tuesday, September 20, 2016, at 6:00 PM, featuring a speaker, John Keklak, and a list of activities including networking, announcements, and Q&A.

Boston@SPIN
Software Process Improvement Network
Established September 1995

Meeting Coor:Mike.Daly

About Us

- Welcome
- Membership
- Contact
- Careers
- Sponsors

Meetings

- Next Meeting
- Jobs
- Discussions
- Event Schedule
- FAQs/Help

Library

- Newsletters
- Professional
- Job Search
- Posting Jobs
- SPIN-List

Our Sponsors

MITRE

ELIASSEN GROUP
High-Complexity

Welcome to Boston SPIN

Special Notice: We will need to meet in Building C also known as the MITRE Center building. After turning left into the MITRE campus, bear right and follow the signs for the MITRE Center building. Park in the first parking lot on the left.
Walk into the MITRE Center building (one with columns in the front) to sign in.

See our [DIRECTIONS](#) page

Boston SPIN (Software Process Improvement Network) is a forum for free and open exchange of software process improvement experiences and ideas.

[Sign up for our monthly meeting announcements](#)

The organization serves as a source of educational and scientific information for its members, other SPIN organizations, and the general software community. Members of Boston SPIN come from academic, government, and industry backgrounds.

We are an independent, non-profit organization, and our membership is open to everyone.

Boston SPIN meetings are free. No RSVP is necessary.

Our Next Meeting:

Topic:	The Power of Unknowns – Harnessing What You Don't Know to Reliably Estimate Software Projects
Speaker:	John Keklak
Date:	Tuesday - September 20, 2016
Time:	6:00 PM - 8:30 PM

This event will include:
FREE PIZZA in addition to our snacks:

- 6:00-7:00 Networking with PIZZA
- 6:00-6:45 [Sponsorship](#) (info with PIZZA)
- 6:45-7:00 Community Announcements / Job Leads
- 7:00-7:10 Announcements
- 7:10-7:45 [Presentations](#)
- 8:15-8:30 Questions and Answers

Who's invited: Everyone (industry, government, academia)

Location: The MITRE Cooridite

John Keklak

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No need for panic!

All we will do right now is...

Boston@SPIN
Software Process Improvement Network
Established September 1992

Meeting Coor:Mike.Daly

About Us

- Welcome
- Membership
- Contact
- Home
- Success

Meetings

- Next Meeting
- Past
- Discusstos
- Present Schedule
- Past Meetings

Library

- Newsletters
- Presentations
- Specials/Quizzes

Resources

- Professional
- Job Search
- Finding Jobs
- SPIN-List

Our Sponsors

MITRE
ELIASSEN GROUP
High Consulting

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FREE PIZZA in addition to our snacks:

- 6:00-7:00 Networking with PIZZA
- 6:00-6:45 *Scrum* talk with PIZZA
- 6:45-7:00 Community Announcements / Job Leads
- 7:00-7:10 Announcements
- 7:10-7:45 Presentation
- 8:15-8:30 Questions and Answers

Who's invited: Everyone (industry, government, academia)

Location: The MITRE Cooridate

John Keklak

Software Development Institute

john@keklak.com

No need for panic!

All we will do right now is...

...estimate the time required for the project.

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Boston@SPIN
Software Process Improvement Network
Established September 1995

Meeting Cancellation Policy

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FREE PIZZA in addition to our snacks:

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- 6:00-6:45 [Announcements](#) (also with PIZZA)
- 6:45-7:00 Community Announcements / Job Leads
- 7:00-7:10 Announcements
- 7:10-7:45 [Presentations](#)
- 8:15-8:30 Questions and Answers

Who's invited: Everyone (industry, government, academia)

Location: The MITRE Cooperative

John Keklak

Software Development Institute

john@keklak.com

What should we do?

The screenshot shows the Boston@SPIN website with a meeting announcement. The left sidebar contains navigation links for About Us, Welcome, Membership, Contacts, Charity, Sponsors, Meetings, Next Meeting, Talk, Directs, Annual Schedule, Roundtables, Library, Newsletters, Presentations, Sponsors Guidelines, Resources, Professional, Job Search, Looking Jobs, SPIN Eas, and Our Sponsors. The main content area features a 'Welcome to Boston SPIN' section with a 'Special Notice' about meeting location, a 'Directions' link, and a 'Sign up for our monthly meeting announcements' link. Below this is a 'Our Next Meeting' section with details for a talk by John Keklak on September 20, 2016, including a list of activities and a schedule.

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Topic: [The Power of Unknowns -- Harnessing What You Don't Know to Reliably Estimate Software Projects](#)

Speaker: [John Keklak](#)

Date: **Tuesday - September 20, 2016**

Time: **6:00 PM - 6:30 PM**

This event will include:
FREE PIZZA in addition to our snacks.

- 6:00-7:00 Networking with PIZZA
- 6:00-6:45 [Roundtables](#) (also with PIZZA)
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Who's Invited: Everyone (industry, government, academia)

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Who's Invited: Everyone (industry, government, academia)

Location: The MITRE Corporation

Identify what we don't know

What should we do?

The screenshot shows the Boston@SPIN website with a navigation menu on the left and a main content area. The navigation menu includes links for Welcome, Membership, Contacts, Charity, Sponsors, Meetings, Next Meeting, Book, Directs, Annual Schedule, Roundtables, Library, Newsletters, Presentations, Sponsors Guidelines, Resources, Professional, Job Search, Looking Jobs, SPIN Etc, and Our Sponsors. The main content area features a 'Welcome to Boston SPIN' section with a 'Special Notice' about meeting in Building C, a link to 'DIRECTIONS', and a section for 'Our Next Meeting' with details on the topic, speaker, date, time, and agenda.

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- 8:15-8:30 Questions and Answers

Who's Invited: Everyone (industry, government, academia)

Location: The MITRE Corporation

*Identify what we don't know
(there's lots; let's be as thorough as we can)*

John Keklak

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Let's make a list...

The screenshot shows the Boston@SPIN website. The header includes the logo and the text "Software Process Improvement Network" and "Established September, 1992". A navigation menu on the left lists sections like "About Us", "Welcome", "Membership", "Contact", "Charity", "Sponsors", "Meetings", "Next Meeting", "Talk", "Directors", "Annual Schedule", "Roundtables", "Library", "Newsletters", "Employment", "Sponsor Guidelines", "Resources", "Professional", "Job Search", "Posting Jobs", and "SPIN Etc". Below the menu are logos for MITRE and ELIASSEN GROUP. The main content area is titled "Welcome to Boston SPIN" and contains a "Special Notice" about meeting location, a link to "DIRECTIONS", a description of Boston SPIN as a forum for software process improvement, a link to "monthly meeting announcements", and information about the organization's independence and meeting fees. A "Our Next Meeting" section details the topic "The Power of Unknowns -- Harnessing What You Don't Know to Reliably Estimate Software Projects" by John Keklak on Tuesday, September 20, 2016, from 6:00 PM to 6:30 PM. It lists activities like networking, roundtables, and presentations, and notes that free pizza and snacks are provided. The meeting is open to everyone in industry, government, and academia, and is held at the MITRE Corporation.

Mailing Cancellation Policy

Boston@SPIN
Software Process Improvement Network
Established September, 1992

About Us:
• Welcome
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• Sponsors

Meetings:
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• Directors
• Annual Schedule
• Roundtables

Library
• Newsletters
• Employment
• Sponsor Guidelines

Resources
• Professional
• Job Search
• Posting Jobs
• SPIN Etc

Our Sponsors
MITRE
ELIASSEN GROUP

Welcome to Boston SPIN

Special Notice: We will need to meet in Building C also known as the MITRE Center building.
After turning left into the MITRE campus, bear right and follow the signs for the MITRE Center building.
Park in the first parking lot on the left.
Walk into the MITRE Center building (one with columns in the front) to sign in.

See our [DIRECTIONS](#) page.

Boston SPIN (Software Process Improvement Network) is a forum for free and open exchange of software process improvement experiences and ideas.

[Sign up for our monthly meeting announcements](#)

The organization serves as a source of educational and scientific information for its members, other SPIN organizations, and the general software community. Members of Boston SPIN come from academic, government, and industry backgrounds.

We are an independent, non-profit organization, and our membership is open to everyone.

Boston SPIN meetings are free. No RSVP is necessary.

Our Next Meeting:

Topic: [The Power of Unknowns -- Harnessing What You Don't Know to Reliably Estimate Software Projects](#)

Speaker: [John Keklak](#)

Date: **Tuesday - September 20, 2016**

Time: **6:00 PM - 6:30 PM**

This event will include:
FREE PIZZA in addition to our snacks.

- 6:00-7:00 Networking with PIZZA
- 6:00-6:45 Roundtables (also with PIZZA)
- 6:45-7:00 Community Announcements / Job Leads
- 7:00-7:10 Announcements
- 7:10-8:15 Presentation
- 8:15-8:30 Questions and Answers

Who's Invited: Everyone (industry, government, academia)

Location: The MITRE Corporation

John Keklak

Software Development Institute

john@keklak.com

Let's make a list...

The screenshot shows the Boston@SPIN website interface. At the top left is the Boston@SPIN logo with the tagline 'Software Process Improvement Network' and 'Established September, 1992'. A navigation menu on the left includes links for 'About Us', 'Welcome', 'Membership', 'Contact Us', 'Charity', 'Sponsors', 'Meetings', 'Next Meeting', 'Talk', 'Directors', 'Annual Schedule', 'Roundtables', 'Library', 'Newsletters', 'Employment', 'Sponsor Guidelines', 'Resources', 'Professional', 'Job Search', 'Posting Jobs', and 'SPIN Etc'. Below the menu are logos for MITRE and ELIASSEN GROUP. The main content area features a 'Meeting Cancellation Policy' link at the top right. The central heading is 'Welcome to Boston SPIN'. A 'Special Notice' states that meetings are held in Building C (MITRE Center building) and provides directions: 'After turning left into the MITRE campus, bear right and follow the signs for the MITRE Center building. Park in the first parking lot on the left. Walk into the MITRE Center building (one with columns in the front) to sign in.' Below this, it says 'See our DIRECTIONS page.' The text describes Boston SPIN as a forum for software process improvement experiences and ideas, and notes that the organization serves as a source of educational and scientific information. It also states that the organization is an independent, non-profit and that meetings are free with no RSVP necessary. The 'Our Next Meeting' section lists the following details:
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...of **WIDKI's**.

John Keklak

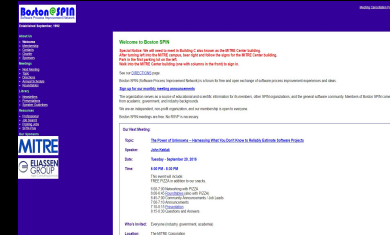
Software Development Institute

john@keklak.com

Let's make a list of WIDKI's

Categories:

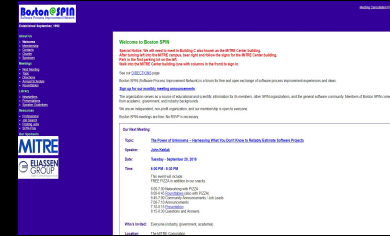
+ What the customer wants



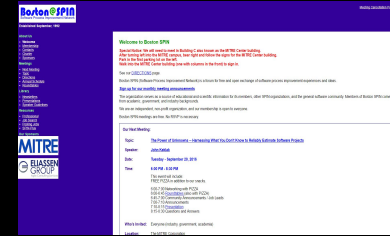
Let's make a list of WIDKI's

Categories:

+ *What the customer wants / what features the website currently has*



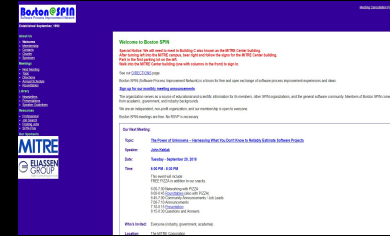
Let's make a list of WIDKI's



Categories:

+ *What the customer wants / what features the website currently has / **what should be added***

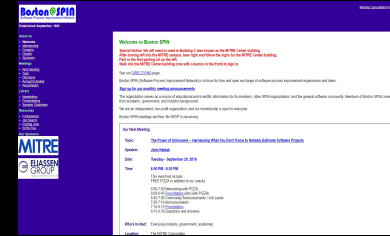
Let's make a list of WIDKI's



Categories:

- + *What the customer wants / what features the website currently has / what should be added*
- + *What the UI should look like*

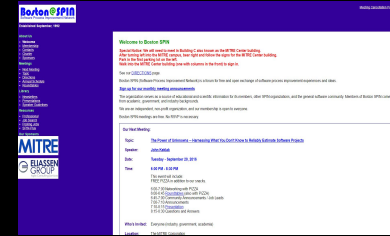
Let's make a list of WIDKI's



Categories:

- + What the customer wants / what features the website currently has / what should be added*
- + What the UI should look like*
- + How code and data should be structured*

Let's make a list of WIDKI's



Categories:

- + What the customer wants / what features the website currently has / what should be added*
- + What the UI should look like*
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To be continued...

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Boston@SPIN
Software Process Improvement Network
Established September, 1992

Meeting Cancellation Policy

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...over the course of the year.

John Keklak

Software Development Institute

john@keklak.com

To be continued...

The screenshot shows the Boston@SPIN website with a purple header and a white content area. The left sidebar contains navigation links for 'About Us', 'Meetings', and 'Resources'. The main content area is titled 'Welcome to Boston SPIN' and includes a 'Special Notice' about the meeting location, a 'Directions' link, and a 'Our Next Meeting' section. The meeting details are as follows:

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Who's Invited: Everyone (industry, government, academia)

Location: The MITRE Corporation

...over the course of the year.
To find out more, fill out a form and leave it with me.

John Keklak

Software Development Institute

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*So why do you think unknowns
produce reliable estimates?*

*So why do you think unknowns
produce reliable estimates?*

+ Hint:

*So why do you think unknowns
produce reliable estimates?*

*+ Hint: Programmers spend about 2% of their time writing new
code,*

*So why do you think unknowns
produce reliable estimates?*

*+ Hint: Programmers spend about 2% of their time writing new
code, **less than 10% of their time modifying existing code,***

So why do you think unknowns produce reliable estimates?

*+ Hint: Programmers spend about 2% of their time writing new code, less than 10% of their time modifying existing code, **and 80+% of their time figuring out what the customer wants, what a UI should look like, how to organize data, how to structure code, how to use API's, how code should do things, how existing code works, and what is causing a particular bug.***

*So why do unknowns
produce reliable estimates?*

+ An estimate based on unknowns

*So why do unknowns
produce reliable estimates?*

+ An estimate based on unknowns is based on what actually goes on in a software project.

*Other benefits of unknowns
we don't have time to get into tonight*

*Other benefits of unknowns
we don't have time to get into tonight*

+ Much more effective communication with developers and other stakeholders

Other benefits of unknowns we don't have time to get into tonight

+ Much more effective communication with developers and other stakeholders

+ Developers embrace the approach

Other benefits of unknowns we don't have time to get into tonight

- + Much more effective communication with developers and other stakeholders*
- + Developers embrace the approach (**enormously valuable!**)*

How to find out about these other benefits

How to find out about these other benefits

I will give continuing talks on using unknowns,

How to find out about these other benefits

I will give continuing talks on using unknowns, in particular on:

+ communicating with developers and customers

How to find out about these other benefits

I will give continuing talks on using unknowns, in particular on:

+ communicating with developers and customers, and

*+ **managing projects.***

How to find out about these other benefits

I will give continuing talks on using unknowns, in particular on:

+ communicating with developers and customers, and

+ managing projects.

Email me at john@keklak.com to find out when and where.

To get involved in the Boston SPIN website facelift,

*To get involved in the Boston SPIN website facelift,
fill out a form*

*To get involved in the Boston SPIN website facelift,
fill out a form
or
email me at john@keklak.com*

The Power of Unknowns

Thank you for your time and attention!



The Power of Unknowns

Questions?



John Keklak

Software Development Institute

john@keklak.com

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john@keklak.com