Microsoft
Western Europe
Inner Circle
Partner Event 2009
Rome

Software Process Improvement, Software Factories, and Software Life Cycle Automation

November 2009, NYC SPIN Meeting

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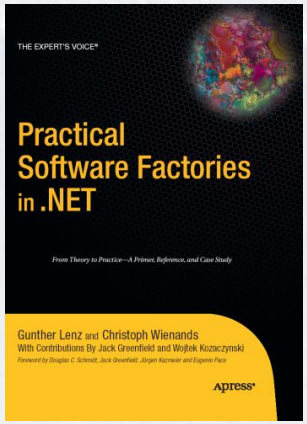
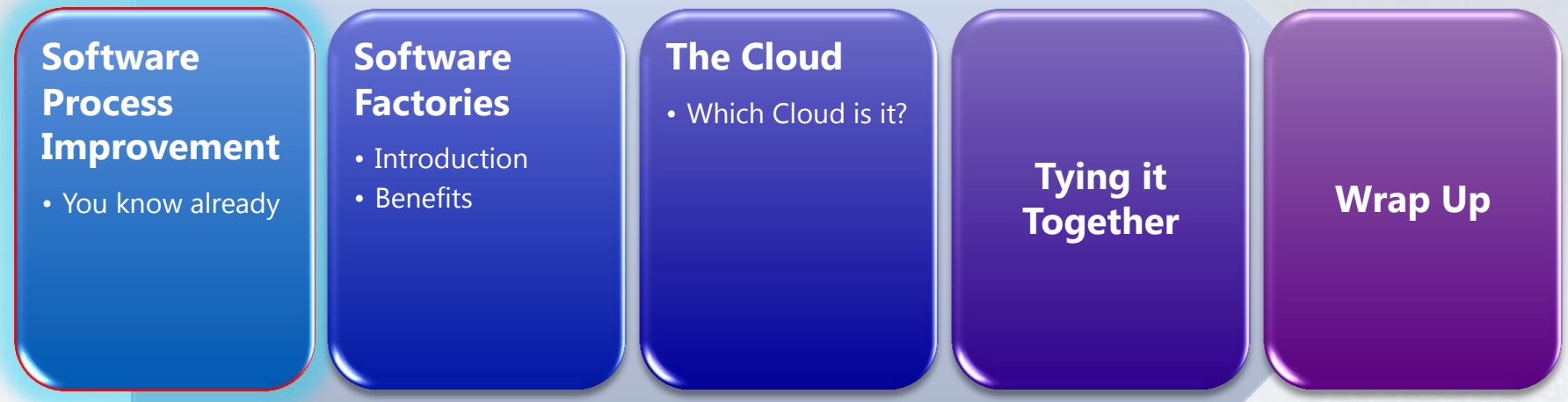


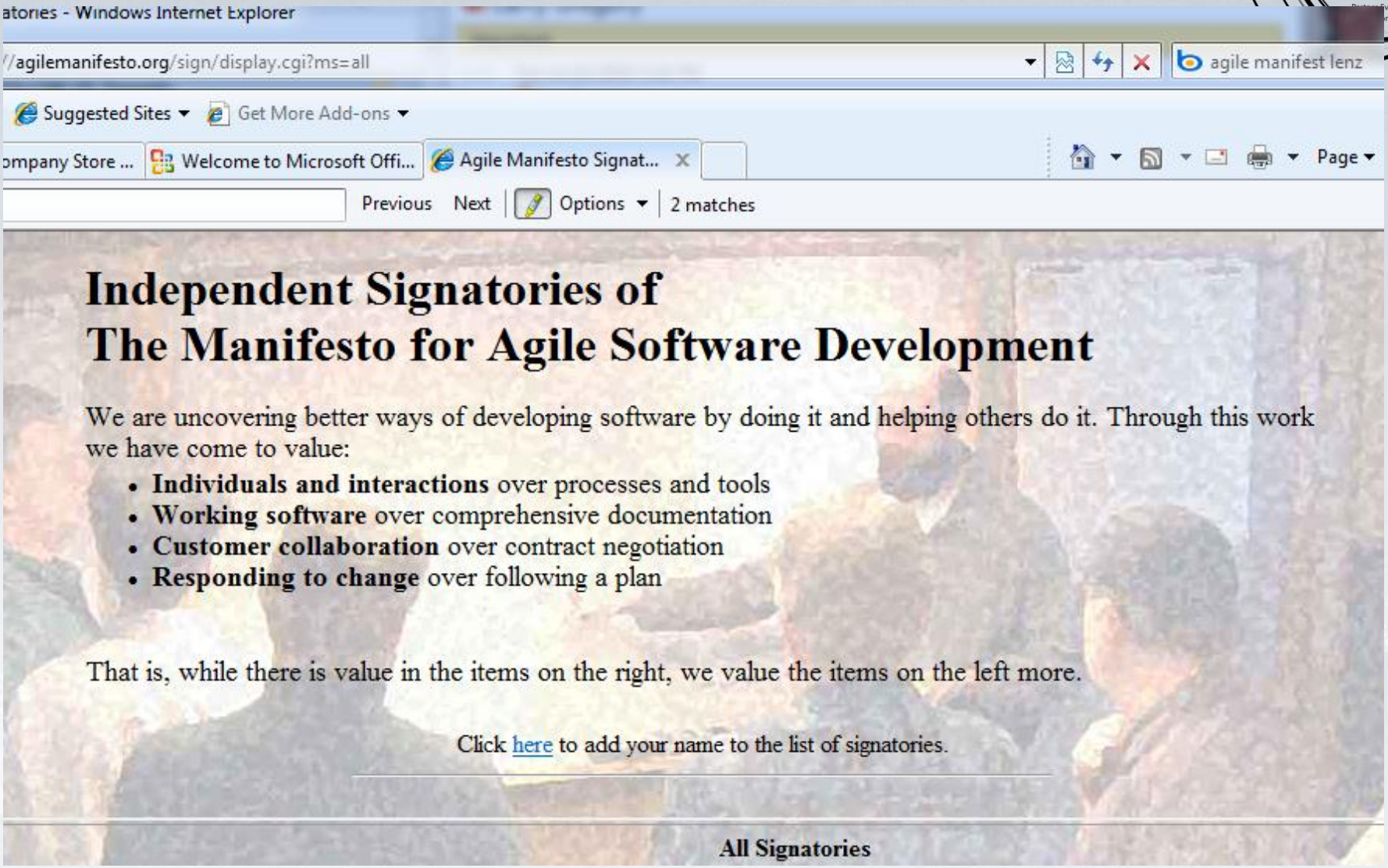
Microsoft Mobile Apps Lab

Outline


Software Process Improvement
• You know already
Software Factories
• Introduction
• Benefits
The Cloud
• Which Cloud is it?
Tying it Together
Wrap Up

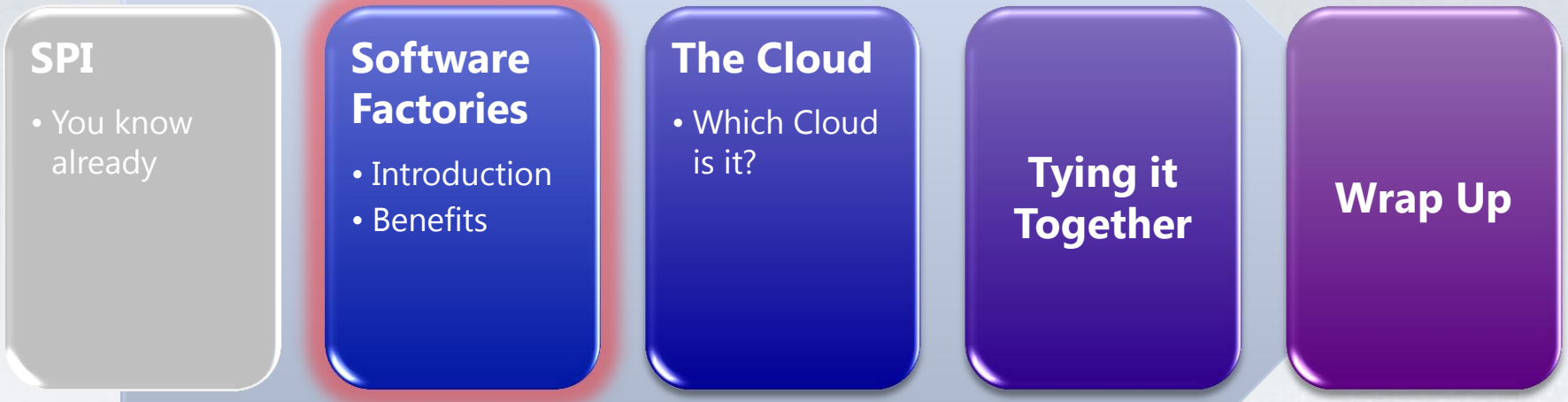
The Software Process

The "Other" Software Process



You know Better Than Me ;-)

Outline


SPI
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Motivation

```
comment complex 2nd order equation-8th October 1963;
begin comment: SECRETARY - October 1963;
integer pagecount, linecount, job no, day, month, year, drum;

procedure outpage; outline(100);

procedure outline(a);
value a; integer a;
begin
if linecount-6 < a then a := linecount+2;
linecount := linecount-a;
for a := a-1 step -1 until 0 do outcr;

if linecount < 0 then begin
pagecount := pagecount+1;
linecount := linecount+64;
if pagecount > 1 then
begin outsp(32); output(←-ddd→,-pagecount,outtext(←<-→)) end;
outtext(←<
→);
end of linecount<0;
end of outline procedure;

procedure tape feed(n);
value n; integer n;
for n := n step -1 until 0 do outchar(63);

drum := drumplace;
linecount := 0;
tape feed(30); outclear;

start:
drumplace := drum;
pagecount := 0;
job no := inone;
if job no < 0 then goto finis;
input(day,month,year);
tape feed(30); outpage;
```

1963

```
public CodeTable()
{
   rgcod = new ArrayList();
}
public ArrayList rgcod;

public void Pass4(XCOD xcod, int i, NTE nte)
{
   Console.WriteLine("P4: " + xcod.ToString());
   this.rgcod.Add(new MICOP(xcod, i, nte));
}

public MICOP MicopLast()
{
   return (MICOP)this.rgcod[this.rgcod.Count - 1];
}
public void DeleteLastMicop()
{
   this.rgcod.RemoveAt(this.rgcod.Count - 1);
}

public void Px()
{
   Console.WriteLine("Produced code");
   int i = 0;
   foreach (MICOP micop in this.rgcod)
   {
      Console.WriteLine("{0,4}\t{1,-14}\t{2}\t{3}",
         i++,
         micop.xcod.ToString(),
         micop.i,
         micop.nte == null ? " " : micop.nte.ToString());
   }

}
```

2006

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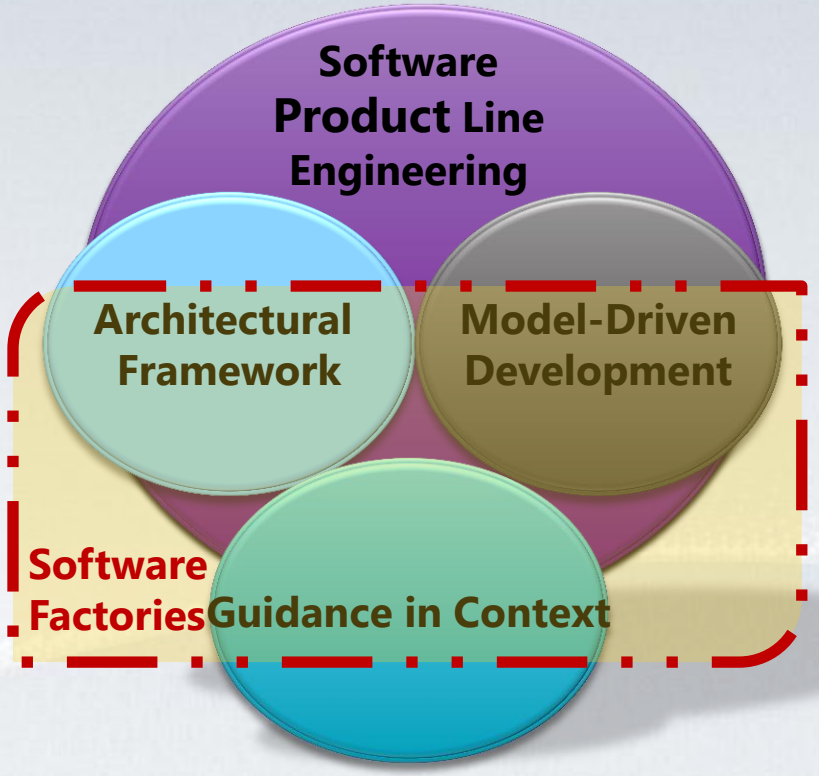
Introduction – Software Factories

- Builds on proven concepts
- Extends concepts
- Coherent development paradigm
- NOT a silver bullet ;-)



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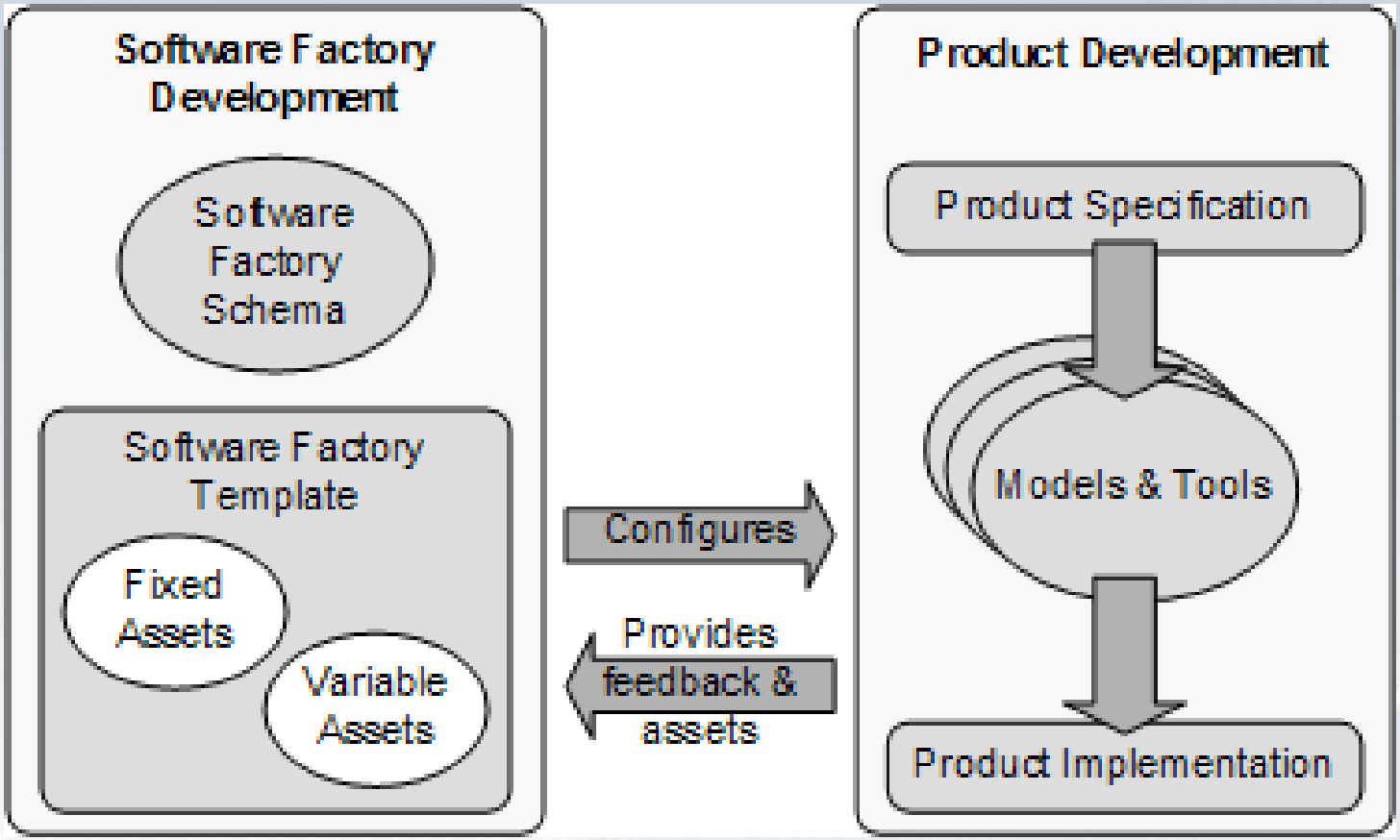
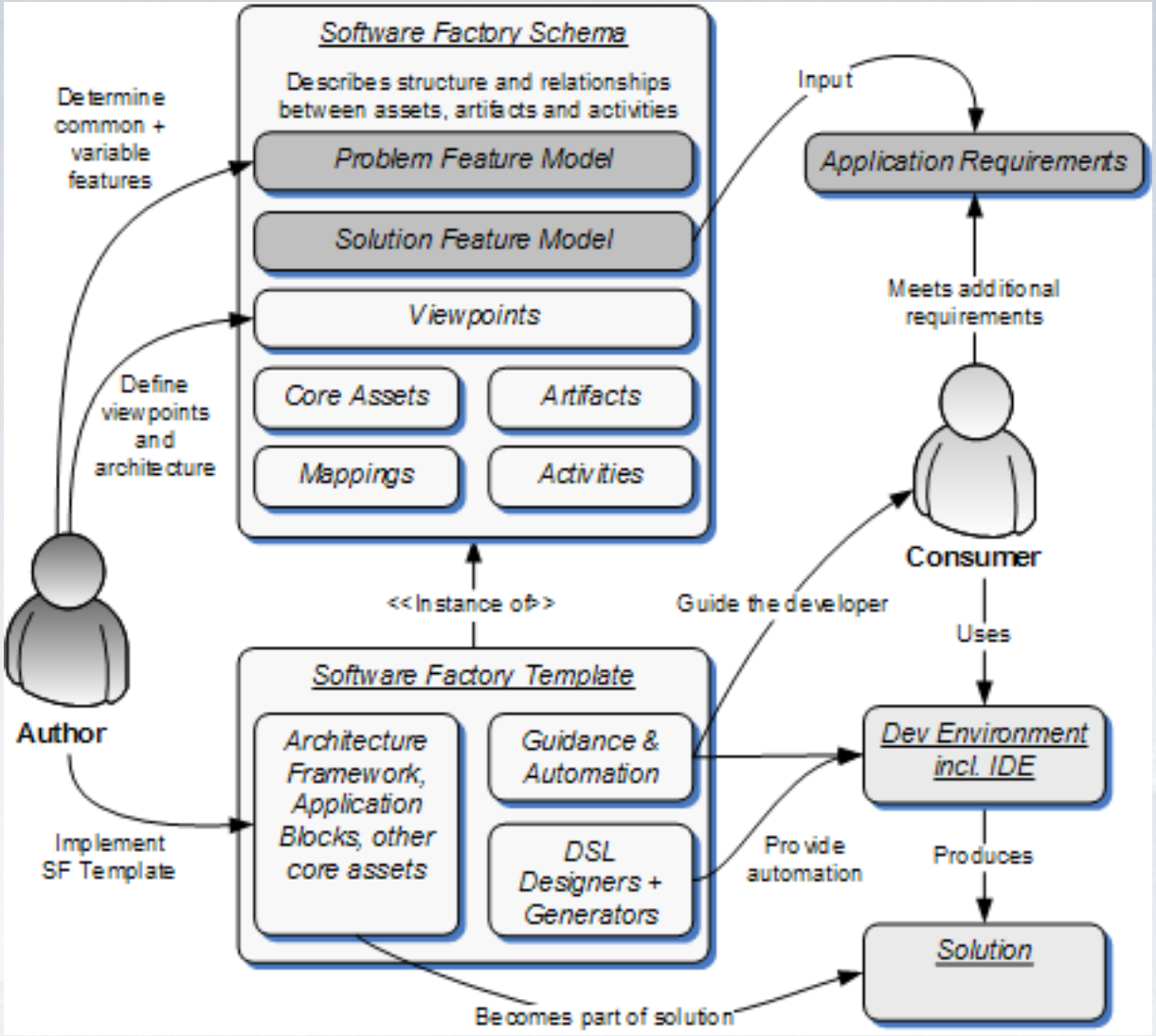
Software Factories





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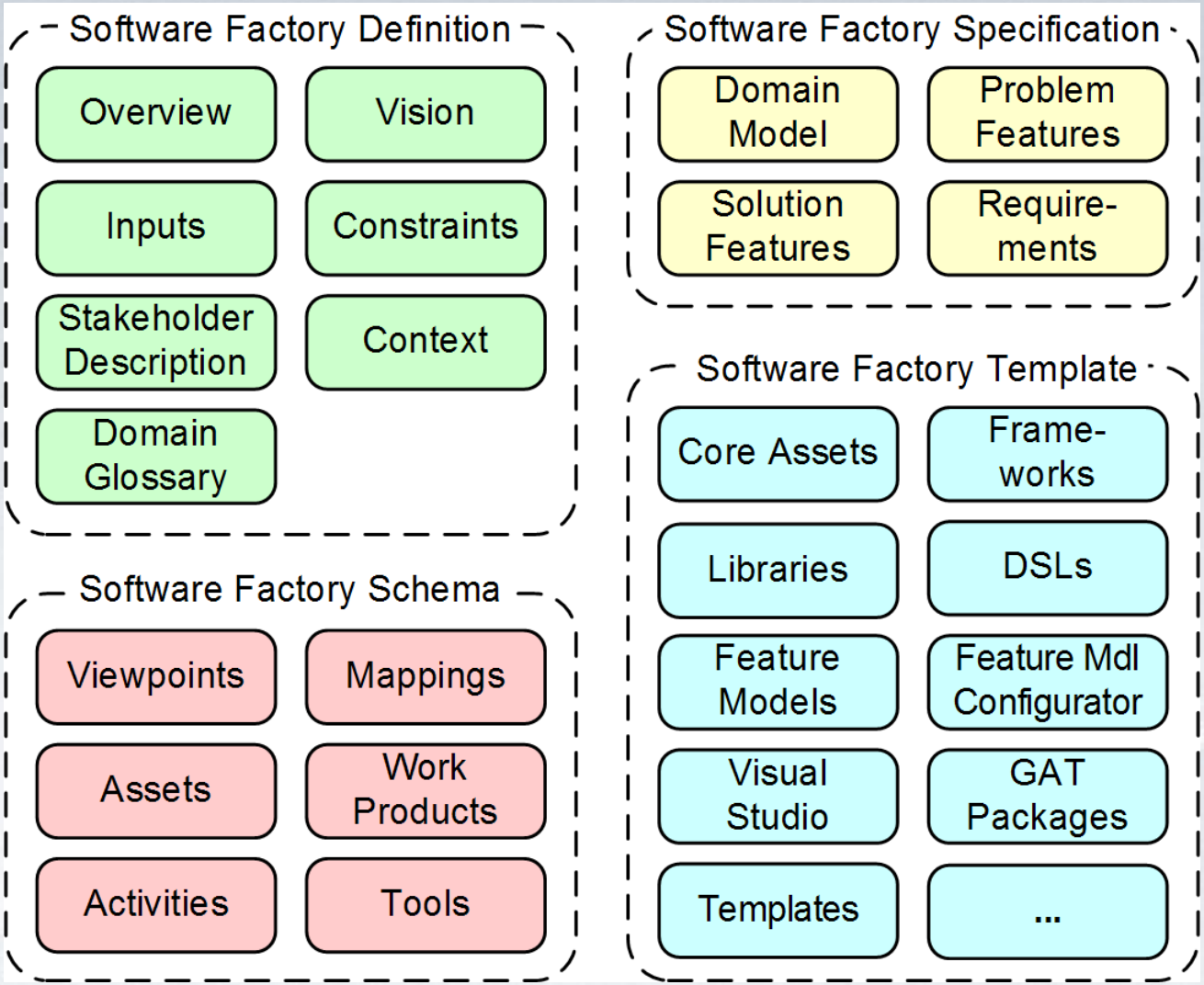
Re-usable Assets



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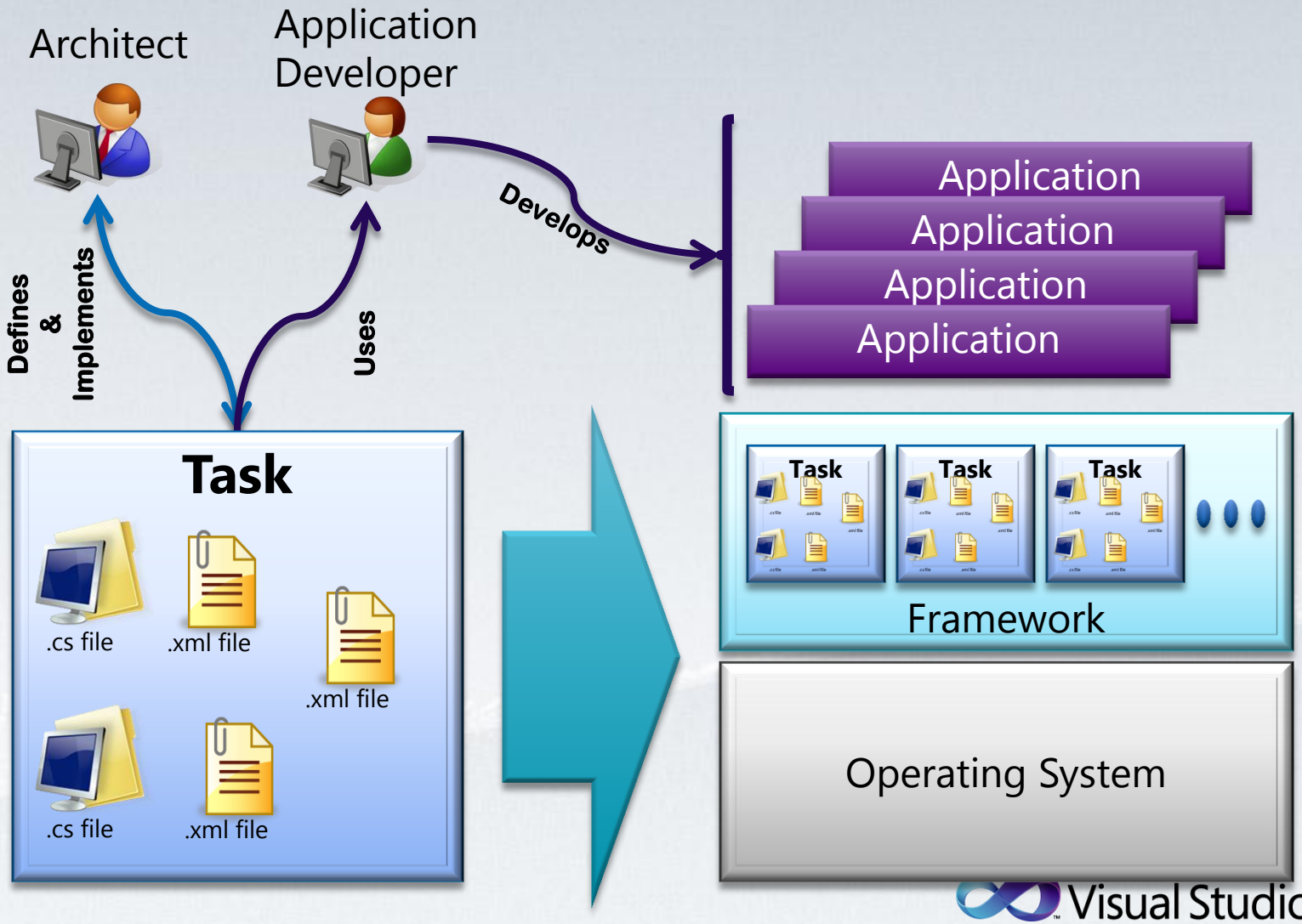
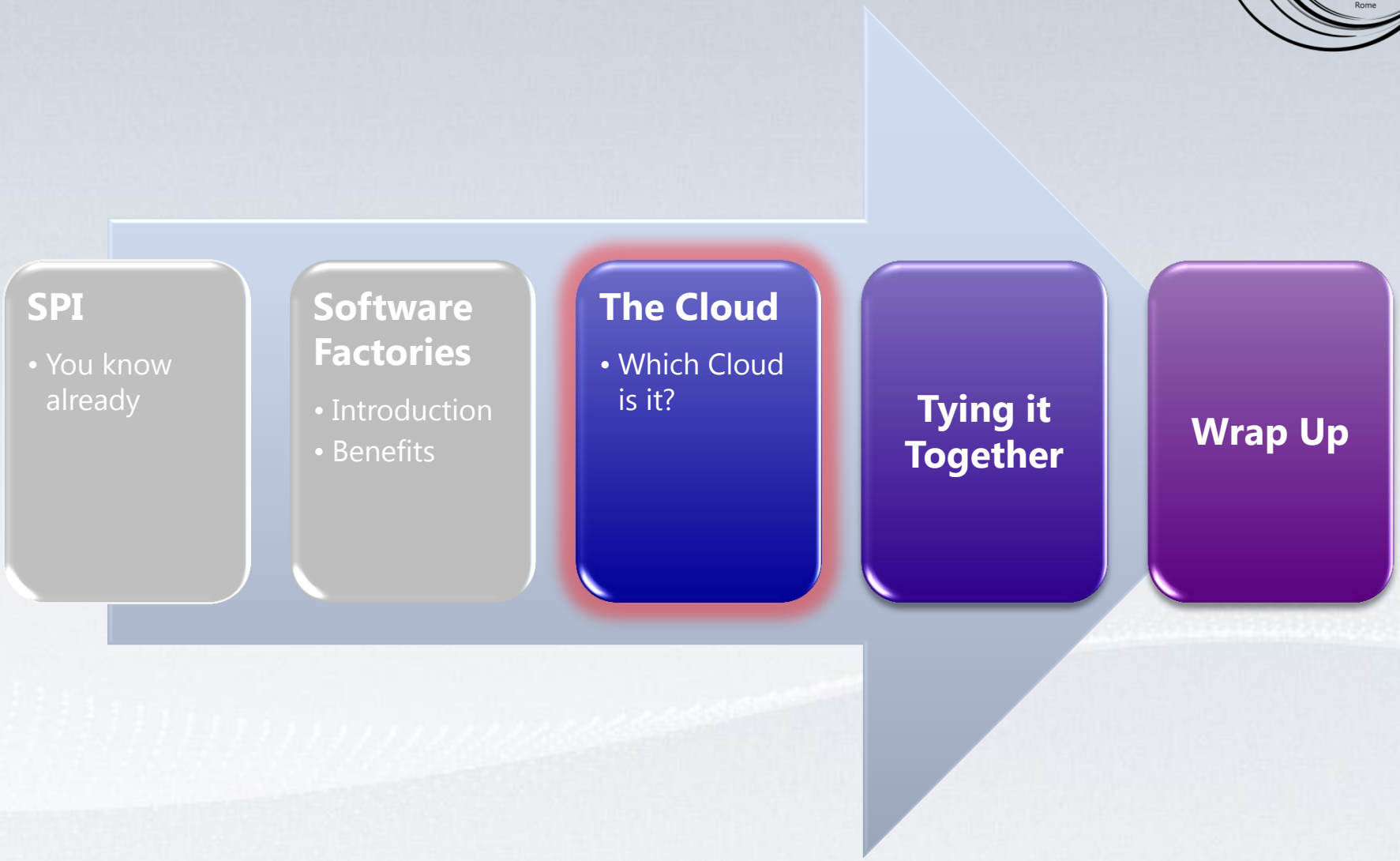
The Project – Context



Visual Studio

Outline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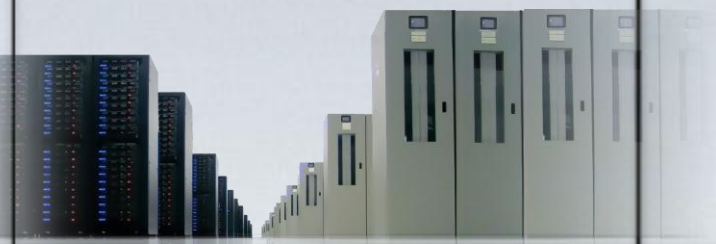
Cloud Computing
Cloud Services
Software as a Service
Infrastructure as a Service
SOA
~2002 - 2009

Platform Continuum



On-Premises Servers

- Bring your own machines, connectivity, software, etc.
- Complete control
- Complete responsibility
- Static capabilities
- Upfront capital costs for the infrastructure

Hosted Servers

- Renting machines, connectivity, software
- Less control
- Fewer responsibilities
- Lower capital costs
- More flexible
- Pay for fixed capacity, even if idle

Cloud Platform

- Shared, multi-tenant infrastructure
- Virtualized & dynamic
- Scalable & available
- Abstracted from the infrastructure
- Higher-level services
- Pay as you go

Build vs. Buy

Application runs **on-premises**	Application runs at a **hoster**	Application runs using **cloud** platform
"Packaged" Application An application that I buy "off the shelf" and run myself	**Hosted "Packaged"** An application that I buy "off the shelf" and then run at a hoster	**"Software as a Service"** A hosted application that I buy from a vendor
"Home Built" Application An application that I develop and run myself	**Hosted "Home Built"** An application that I develop myself, but run at a hoster	**Cloud Platform** An application that I develop myself, that I run in the cloud

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Gartner's top 10 disruptive technologies 2008-2012:

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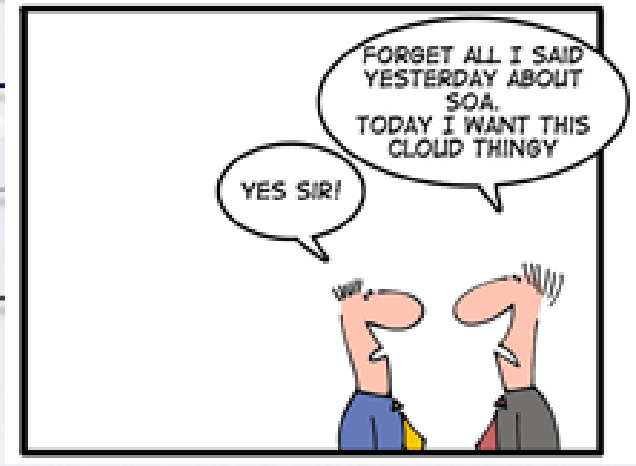
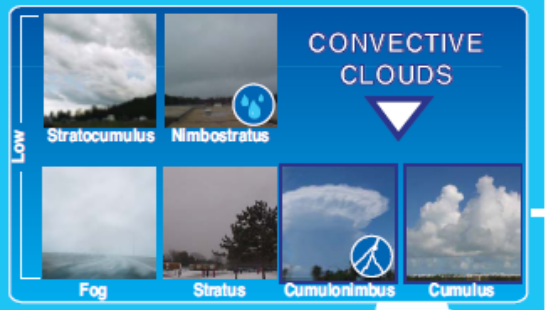
- Multicore and hybrid processors
- **Virtualization and fabric computing**
- Social networks and social software
- **Cloud computing and cloud/Web platforms**
- Web mashups
- User Interface
- Ubiquitous computing
- Contextual computing
- Augmented reality
- Semantics



Introduction to Clouds

http://science-edu.larc.nasa.gov/cloud_chart



Convective Clouds form because of large updrafts of warm, moist air moving up into cold air

Cloud Cover

• Clear	(0% - 5%)
• Partly Cloudy	(5% - 50%)
• Mostly Cloudy	(50% - 95%)
• Overcast	(95% - 100%)

Visual Opacity

- Opaque
- Translucent
- Transparent

The water on Earth is always on the move, changing state from liquid to vapor back to liquid and snow and ice near the poles and mountains. The process used to describe the continuous movement of water between the Earth and atmosphere is known as the water cycle, and is often referred to as the hydrologic cycle. There is no beginning or end to the water cycle; it behaves much like a Ferris wheel at an amusement park, moving around and around.

Cloud Cover

Determination of the amount of cloud cover is done by estimating the percentage of the sky covered with clouds. This is one of several possible scales or categories for cloud cover.

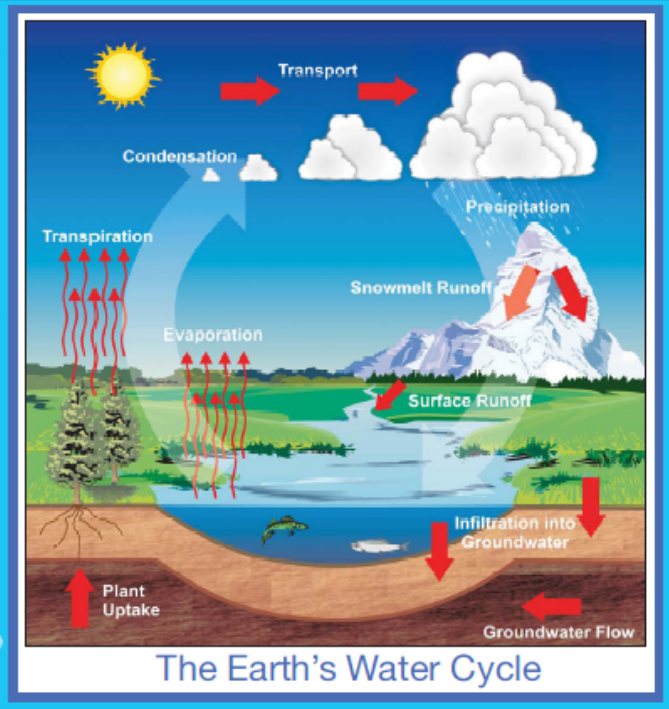
Visual Opacity

The thickness of a cloud determines the amount of light being transmitted through the cloud. Shadows often provide a clue.

Cloud Level

Three levels of clouds have been identified based on the altitude of a cloud's base.

Ever wonder how clouds got their names? Well you may be surprised to find out!



The Earth's Water Cycle

In 1803 Luke Howard used Latin terms to classify four main cloud types.

- Cumulus means pile and describes heaped, lumpy clouds.
- Cirrus, meaning hair, describes high level clouds that look wispy, like locks of hair.
- Featureless clouds that form sheets are called Stratus, meaning layer.
- The term Nimbus, which means "precipitating cloud", refers to low, grey rain clouds.
- Alto is used to describe mid level clouds.
- Finally, convective clouds have a vertical development extending through large portions of the atmosphere.

National Aeronautics and Space Administration
http://www.nasa.gov
http://education.nasa.gov
http://scool.larc.nasa.gov
NP 2007-07-33-LaRC

National Oceanic and Atmospheric Administration
http://www.noaa.gov
http://www.weather.gov
http://www.education.noaa.gov
http://www.srh.noaa.gov/jetstream
YPA-200752-L

Definition of Cloud Computing

"**Cloud computing** is a style of computing in which dynamically scalable and often virtualized resources are provided as a service over the Internet. Users need not have knowledge of, expertise in, or control over the technology infrastructure in the "cloud" that supports them."

Wikipedia

Clients
Services
Application
Platform
Storage
Infrastructure

Microsoft Visual Studio

Microsoft Cloud Services

Applications

Microsoft SharePoint Online

Windows Live

Microsoft Exchange Online

Microsoft Dynamics CRM Online

Microsoft Office Live

Windows Azure Platform

Windows Azure

Microsoft SQL Azure

Microsoft .NET Services

Microsoft Visual Studio

Example: Quark
(Thanks to Warren Wilbee)

Motivation

- Increased competition
- Market saturation

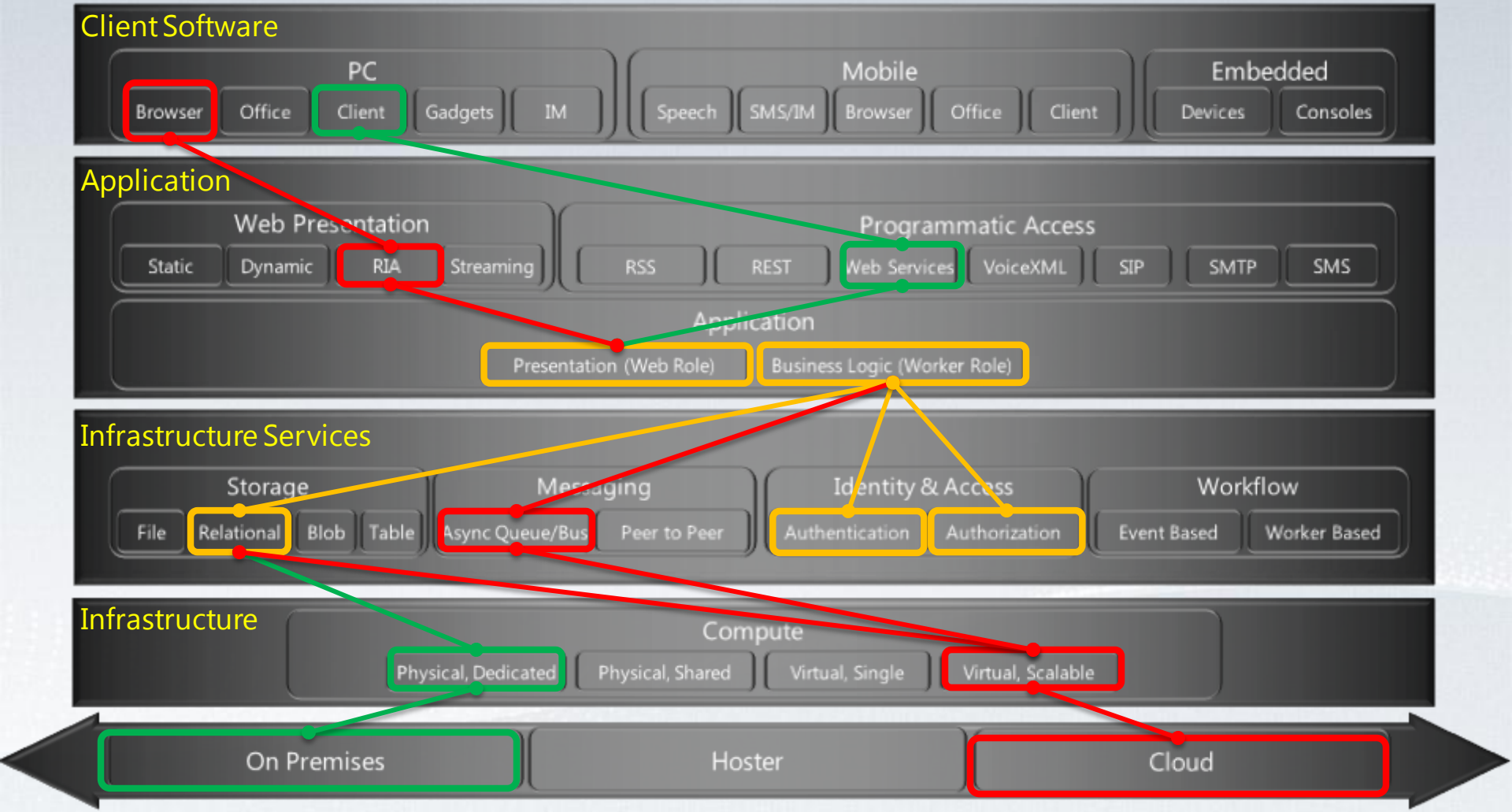
Opportunity

- Extend to new markets
- New business model

Solution

- Free desktop tool
- Online market place

Example Quark



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New York Times

.tiff to .pdf conversion


"All the News That's Fit to Print."

The New York Times.

THE WEATHER.

TITANIC SINKS FOUR HOURS AFTER HITTING ICEBERG; 866 RESCUED BY CARPATHIA, PROBABLY 1250 PERISH; ISMAY SAFE, MRS. ASTOR MAYBE, NOTED NAMES MISSING

Col. Astor and Bride, Isidor Straus and Wife, and Maj. Butt Aboard.

"RULE OF SEA" FOLLOWED

Biggest Liner Plunges to the Bottom at 2:20 A.M.

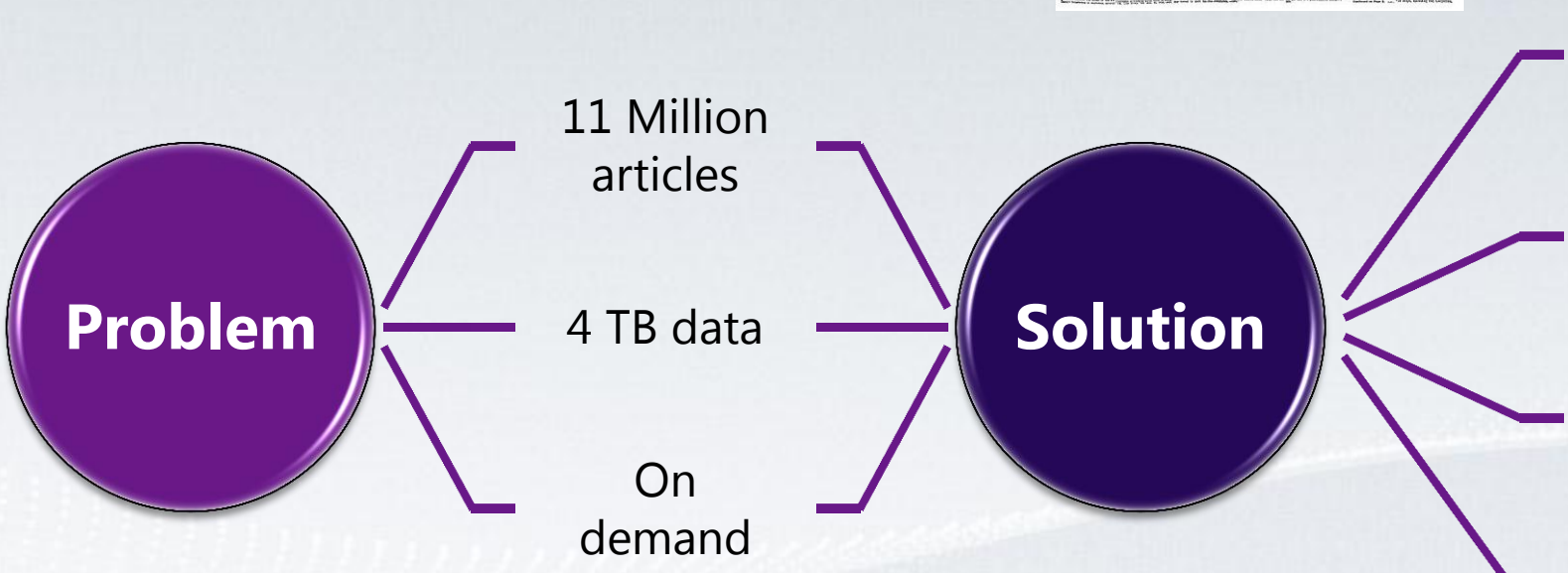
RESCUER THERE TOO LATE

WOMEN AND CHILDREN FIRST

The Lost Titanic Being Towed Out of Belfast Harbor.

PARTIAL LIST OF THE SAVED.

CAPT. E. J. SMITH



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Opportunities

Lower Cost

- CapX
- OpX

"Limitless"

- Availability
- Scalability

Reach new markets

"Local" datacenters

Fast provisioning

Emerging Patters

Transference

Scale and Multi-Tenancy

Burst Compute

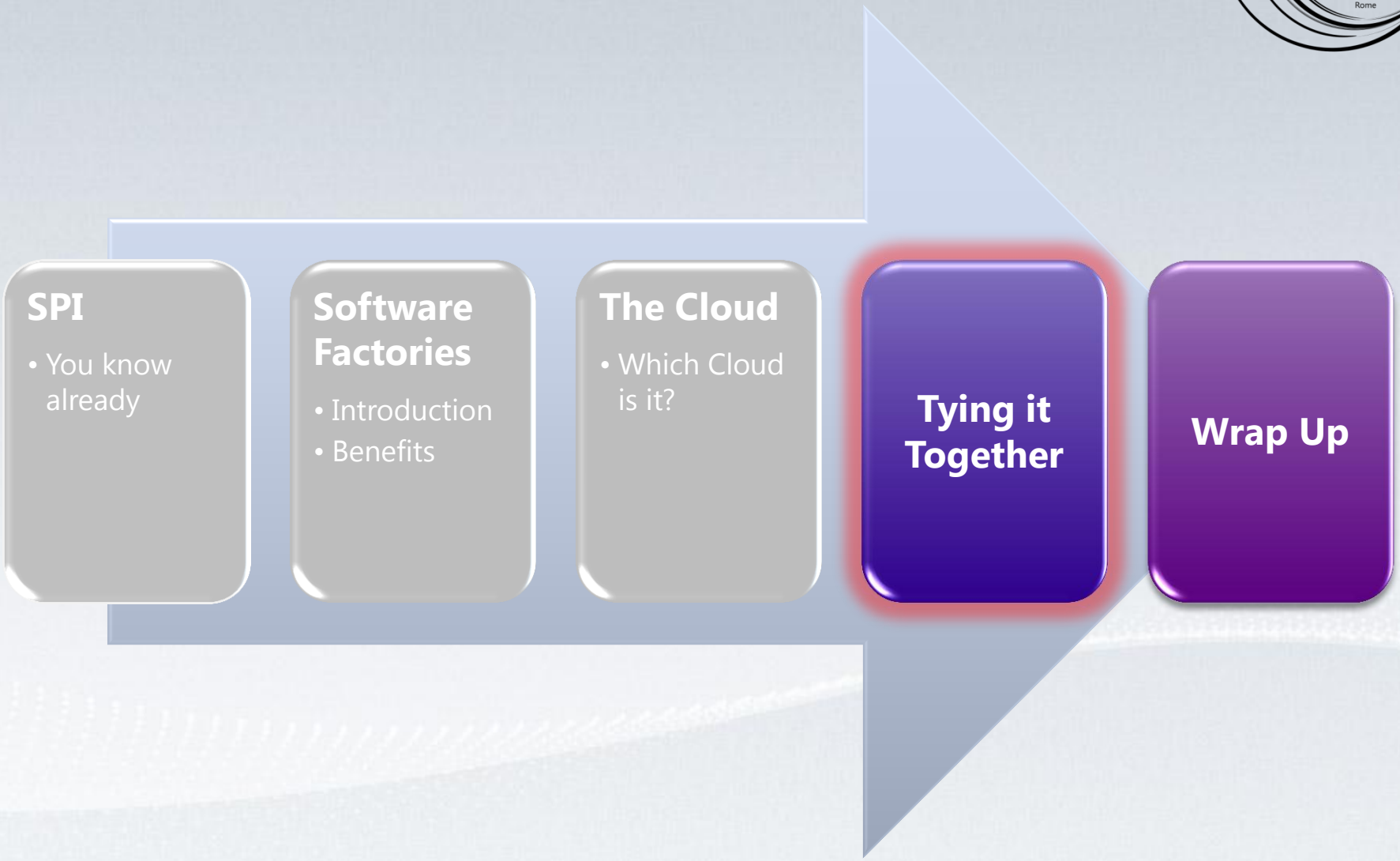
Elastic Storage

Cross-Org Communication

Geo Distribution

Microsoft Visual Studio

Outline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Houston, We Have a Problem

Solutions

Process	Iterative processes
	Continuous feedback
Using the "Cloud"	Losly coupled
	Scalable
	Reliable
	Pay as you go
Systematic reuse	Use SOA
	Re-use code and other assets
	Repeatability
Tools	Support process
	Enable automated testing
	No no-repro bugs
	Automation of tasks
Using BI	Analyze development efforts
	Provide reports
	Enable ad hoc reports

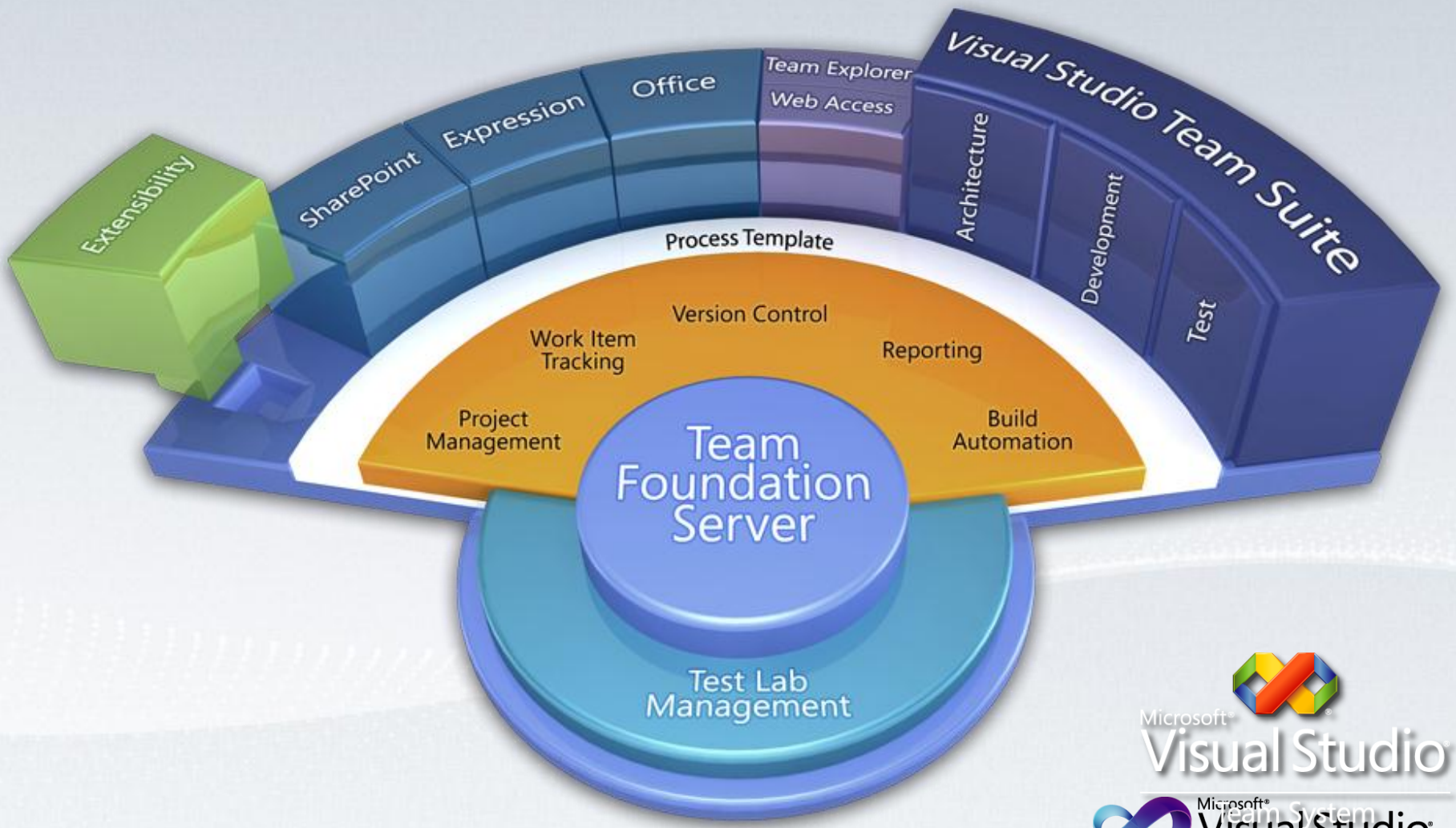
Software Factories

Cloud Computing

Tool Support

Microsoft® Visual Studio

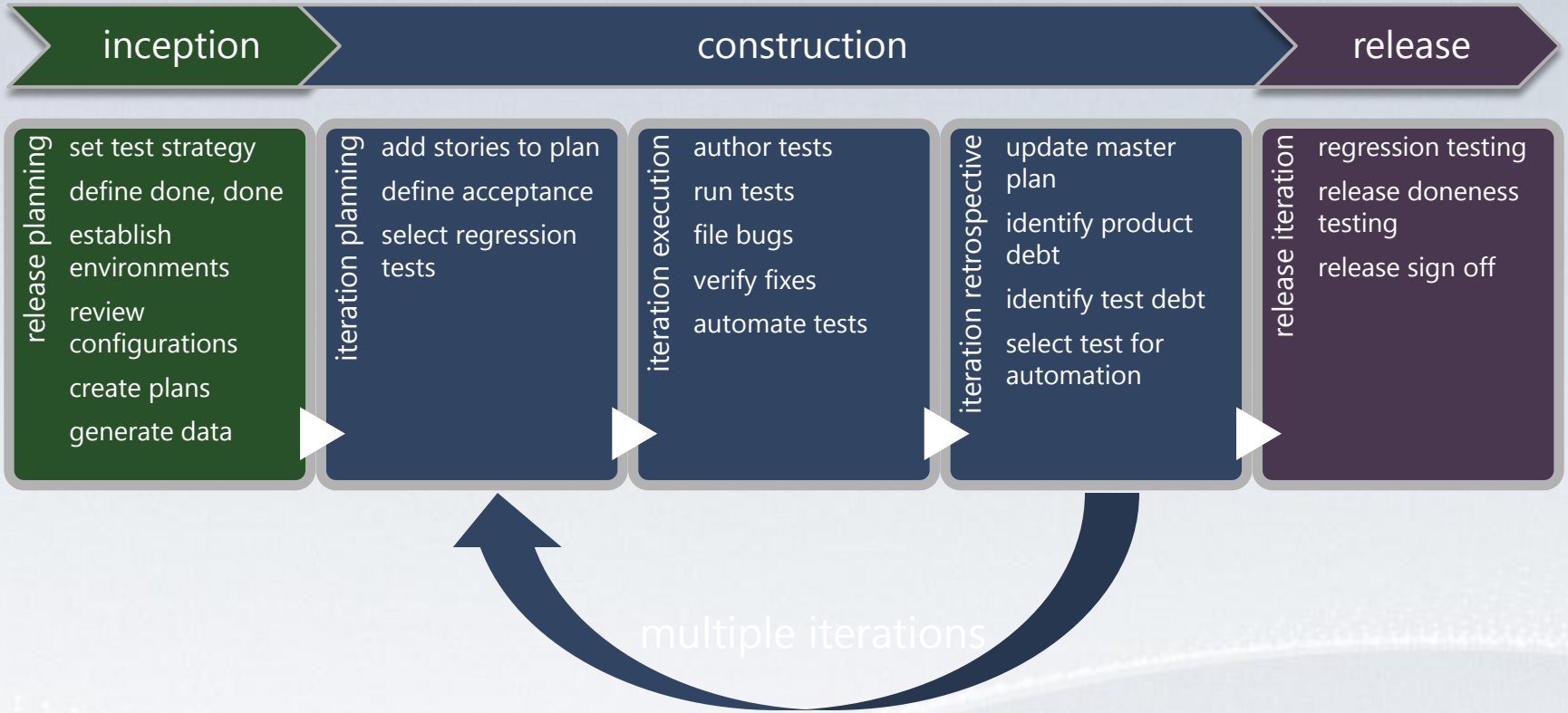
Visual Studio Team System 2010 Application Life Cycle Management (ALM) Solution



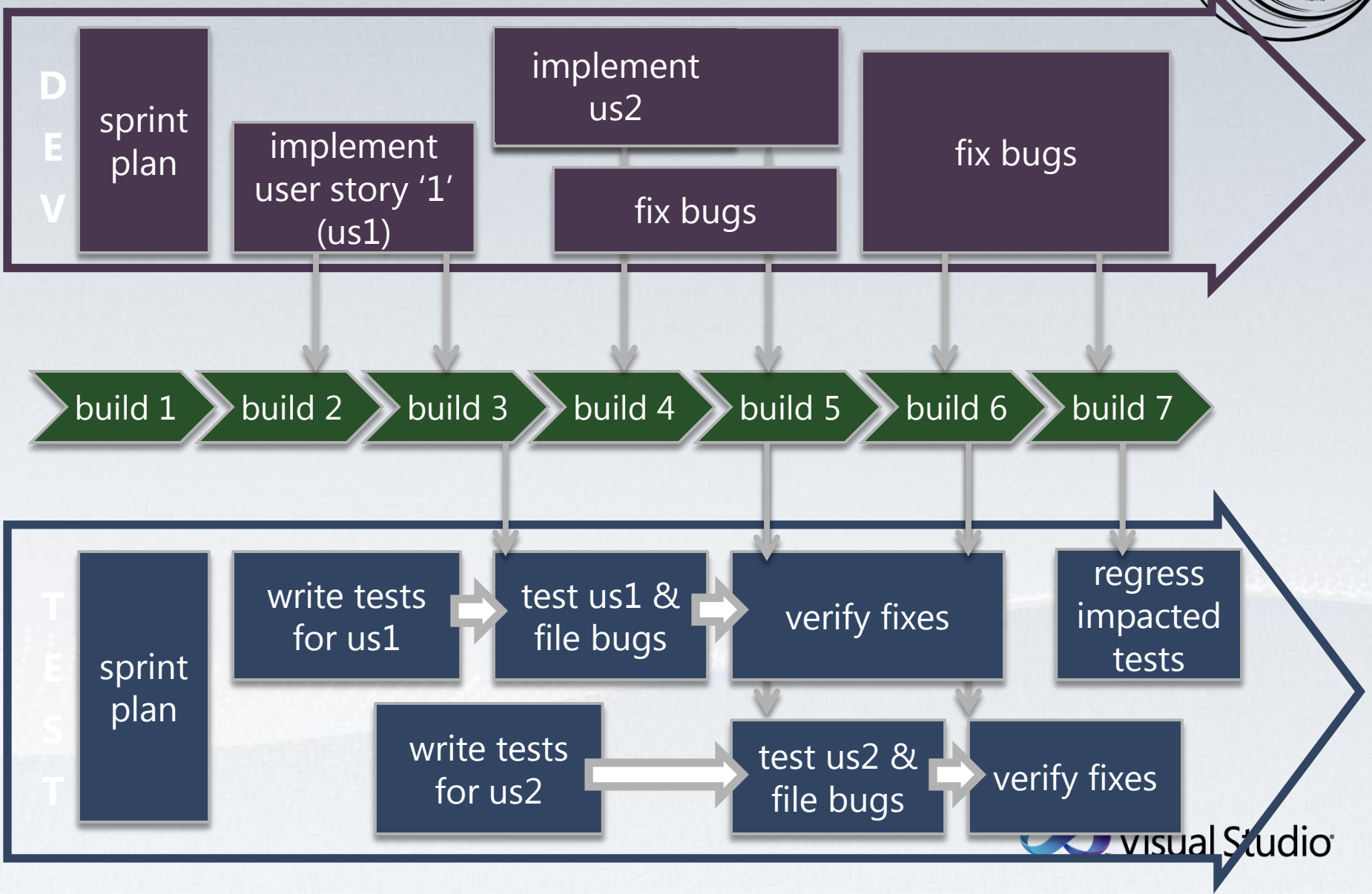
Microsoft Visual Studio

Microsoft Visual Studio Team System

Test Activities

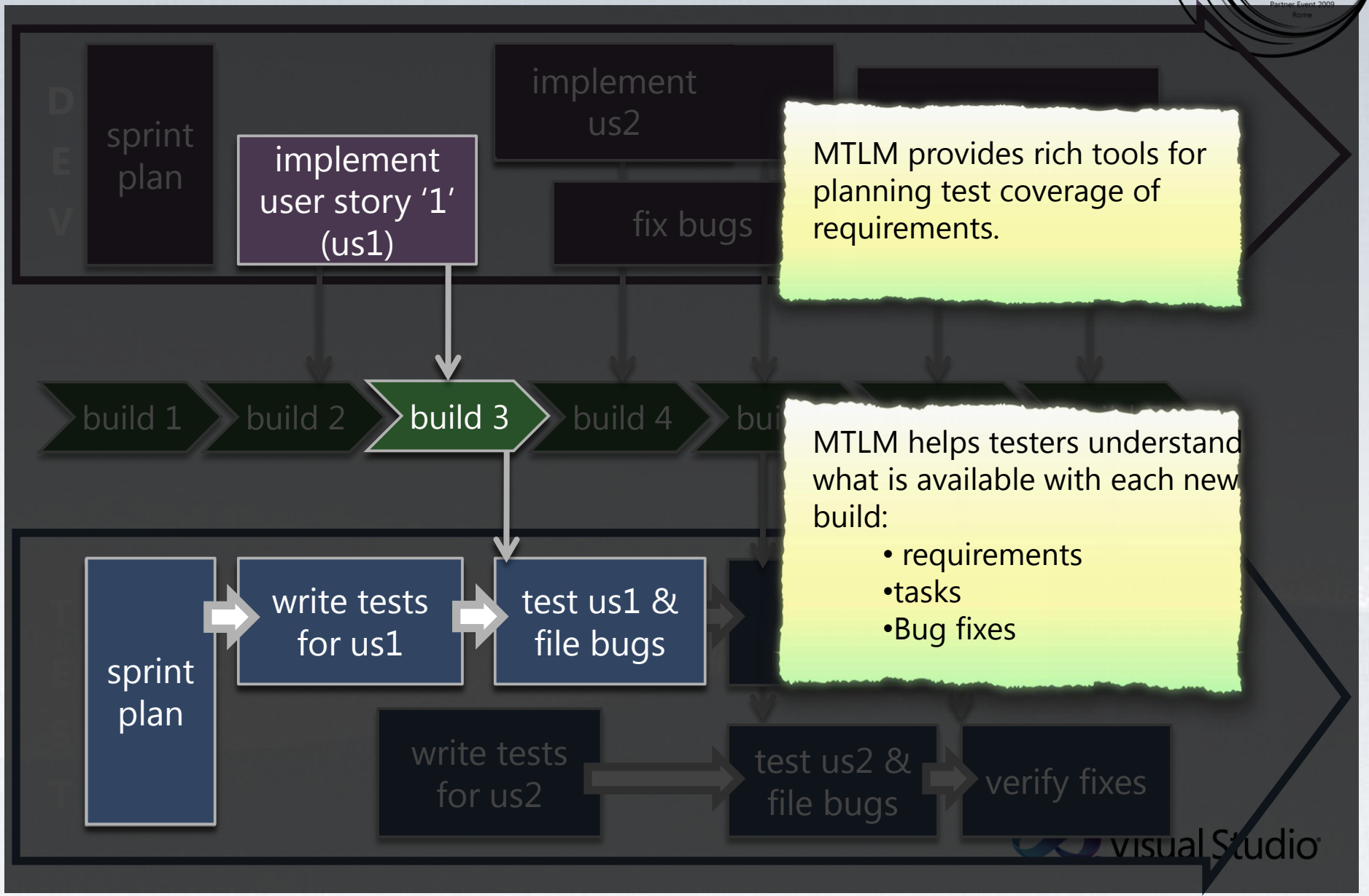


ANATOMY OF AN ITERATION

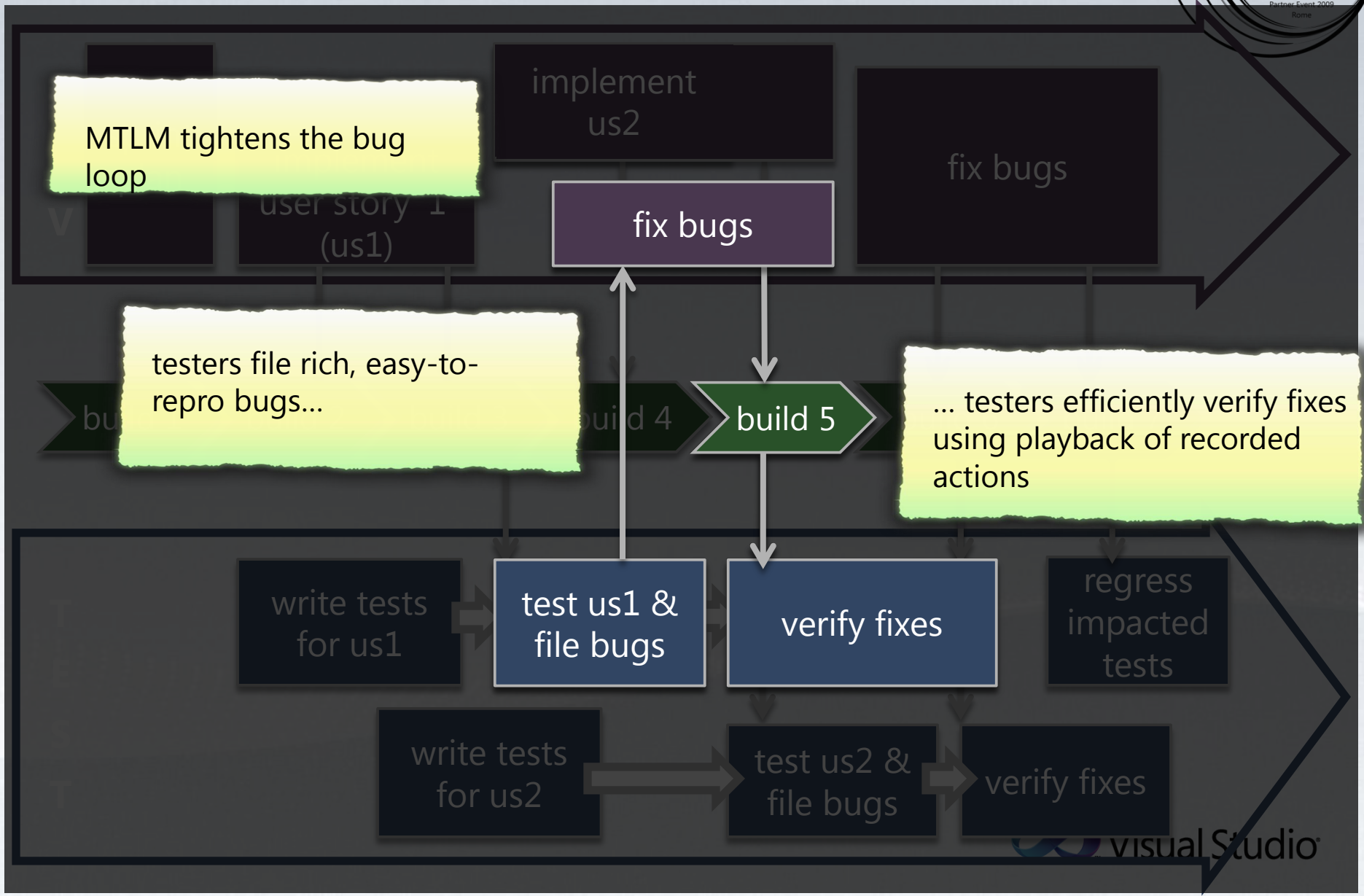


Iteration N

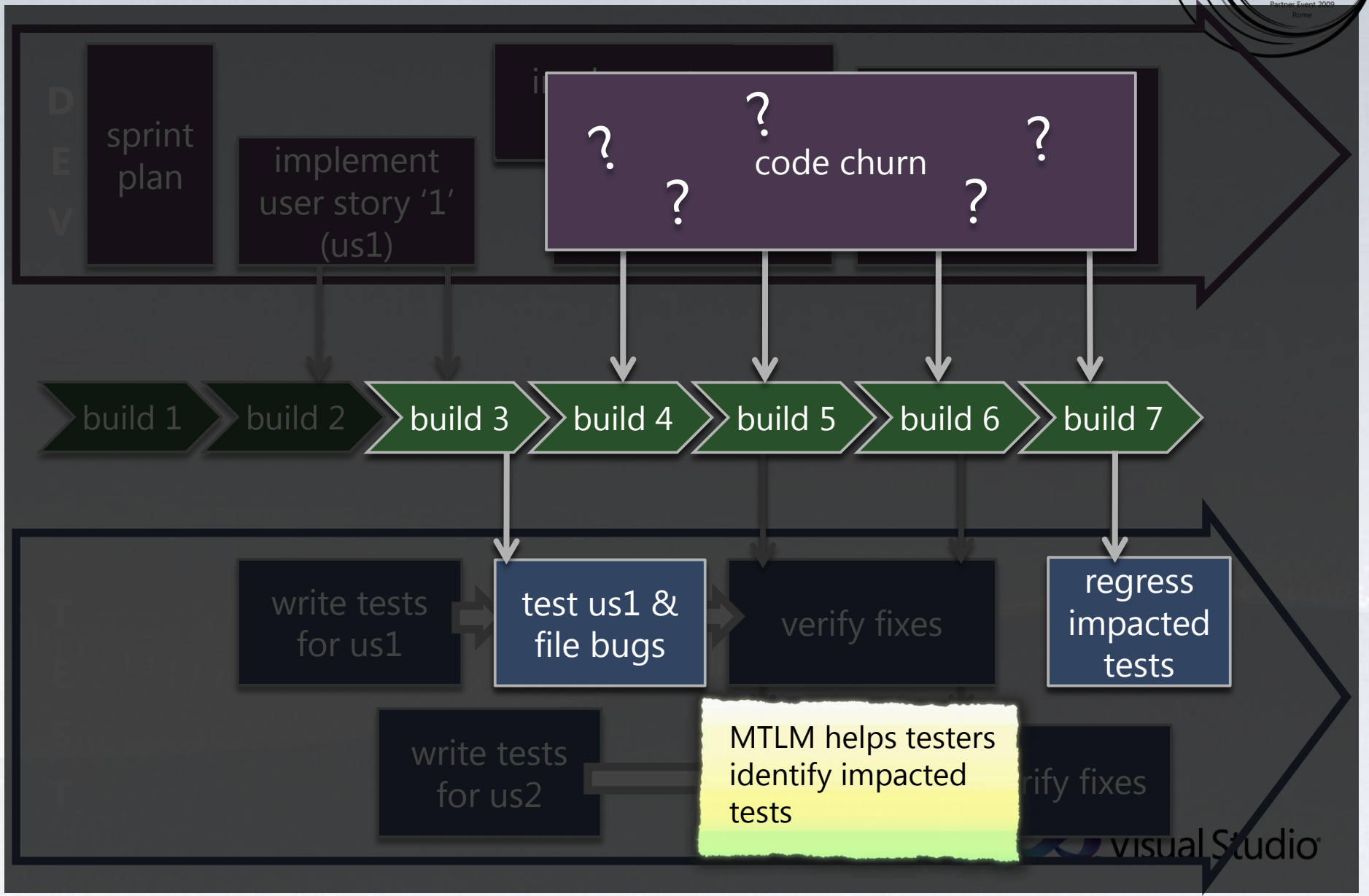
ANATOMY OF AN ITERATION



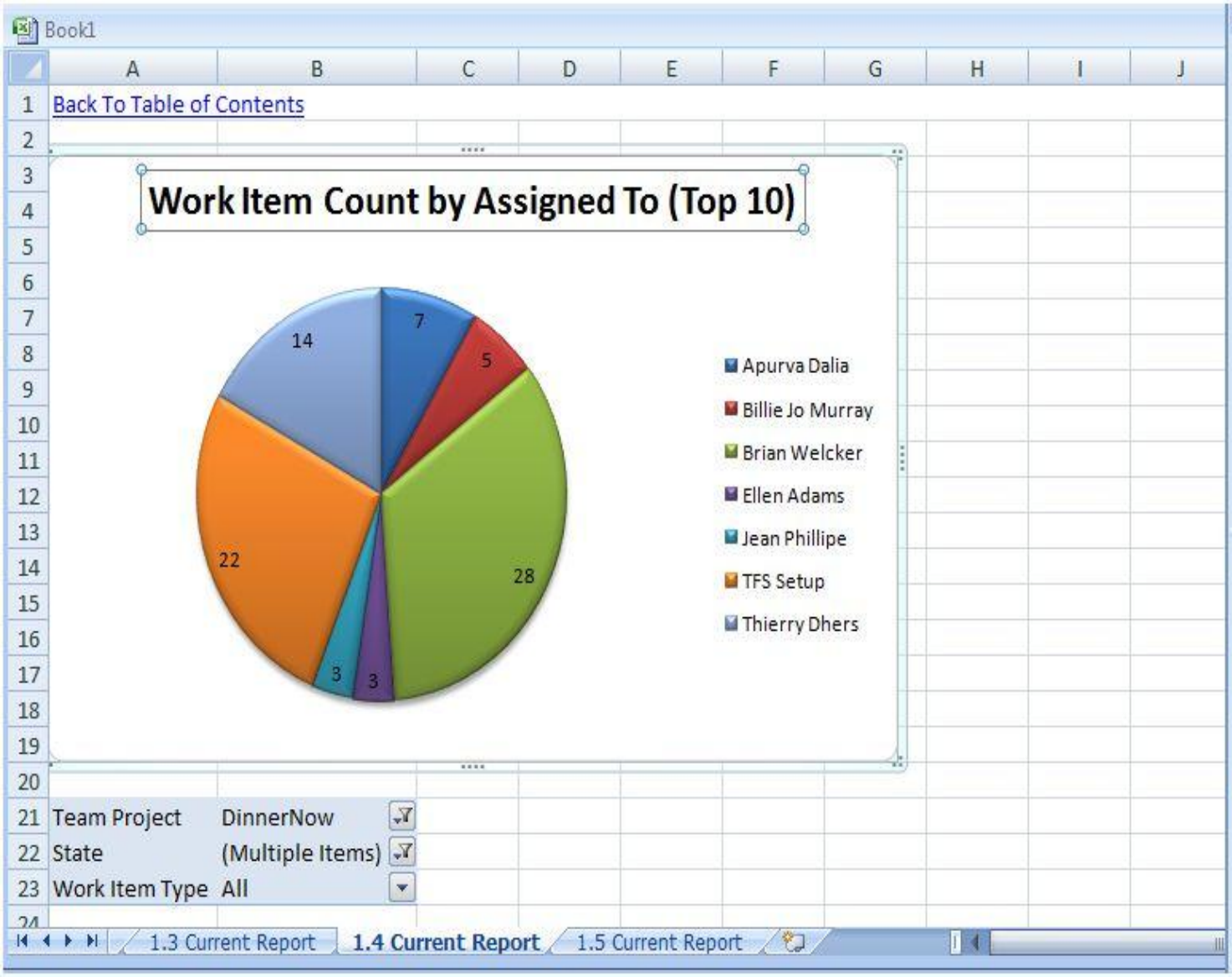
ANATOMY OF AN ITERATION

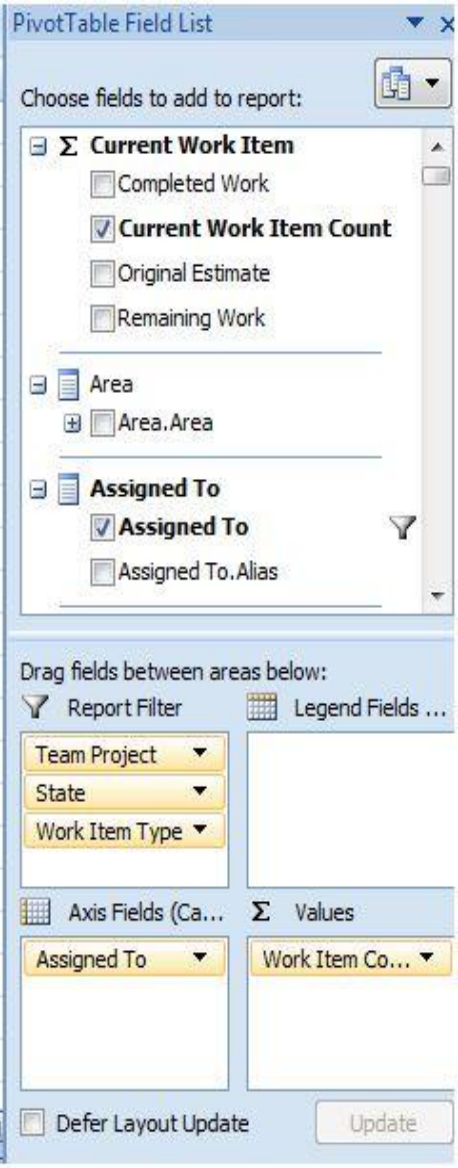


ANATOMY OF AN ITERATION



Ad-hoc reports in Microsoft Excel



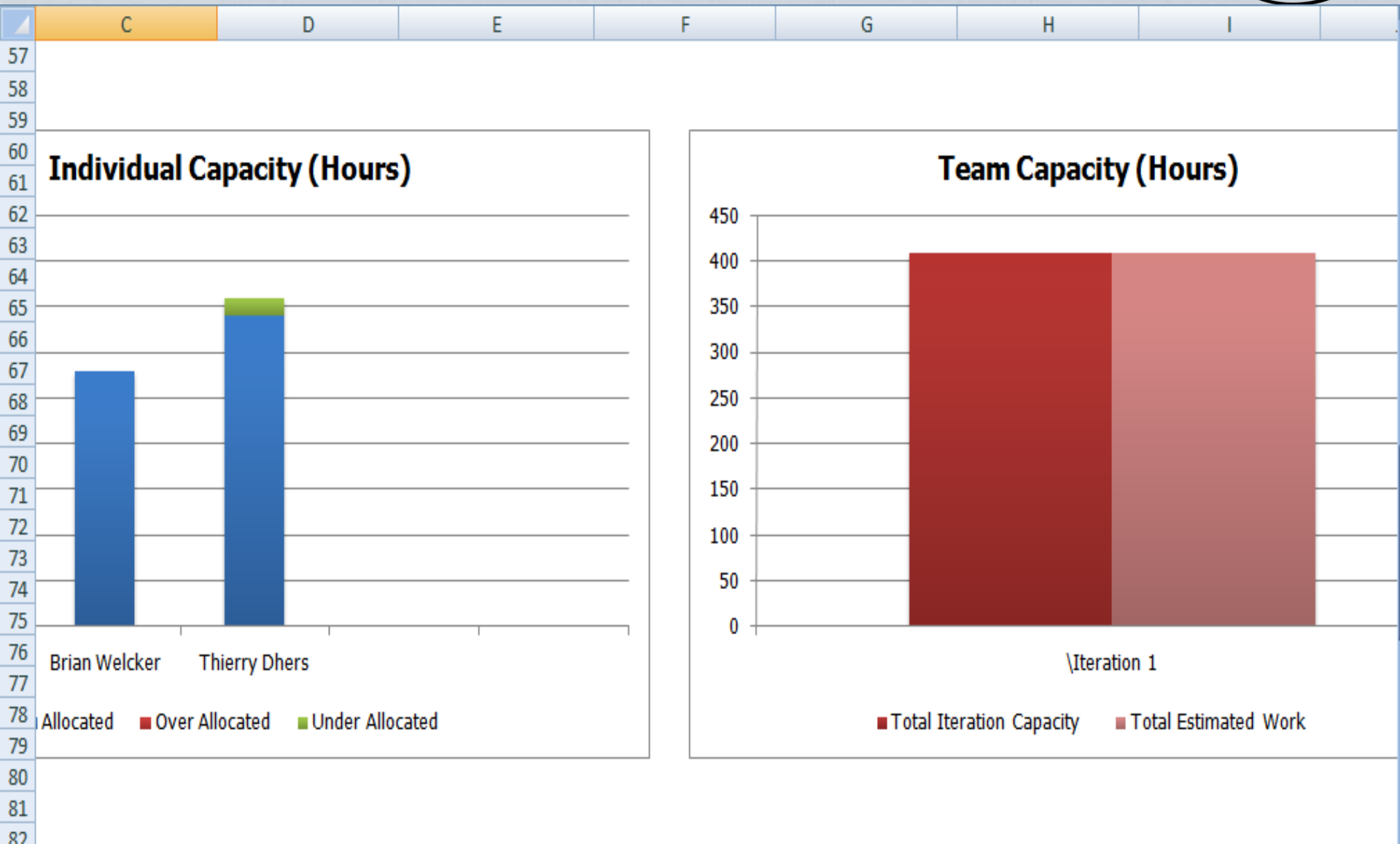


Excel-based Agile Planning Tools

Product Backlog.xlsm - Microsoft Excel

	B	C	D	E	F	G	H	I
2	Work Item Ty	Title	State	Stack Rank	Priori	Original Estimate	Iteration Path	Area Path
3	User Story	Users should get a SMS message when the status of their order changes	Active		1		\Backlog	\
4	User Story	Users should be able to make payments online	Active		1		\Backlog	\
5	User Story	Users should be notified if their order is going to be late	Active		1		\Backlog	\
6	User Story	Users should be able to user DinnerNow from their cell phones	Active		2		\Backlog	\
7	User Story	Users should be able to choose from the most popular menus of the week	Active		3		\Backlog	\
8	User Story	Users should see images in the highest resolution possible	Closed	1	1	64	\Iteration 0	\
9	User Story	Users should be able to write reviews no matter what venue they are looking at	Closed	1	1	48	\Iteration 0	\
10	User Story	Customer can get Lucerne reviews from DinnerNow web site	Closed	1	1	72	\Iteration 1	\
11	User Story	Admin/editor publishes customer submitted review	Closed	1	1	36	\Iteration 1	\
12	User Story	Customer searches for reviews	Closed	1	1	48	\Iteration 1	\
13	User Story	Customer finds restaurant from review	Closed	1	1	24	\Iteration 1	\
14	User Story	Customer finds reviews for restaurant	Closed	1	1	36	\Iteration 1	\
15	User Story	User should see minimal refreshes	Closed	2	1	96	\Iteration 0	\
16	User Story	Users should have to only remember 1 set of credentials	Closed	2	1	8	\Iteration 0	\
17	User Story	Customer can see new functionality in their profile as they are introduced	Active	2	1	48	\Iteration 1	\
18	User Story	Customer rates review	Closed	2	1	48	\Iteration 1	\

Excel-based Agile Planning Tools



Excel-based Agile Planning Tools

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Calculated Velocity

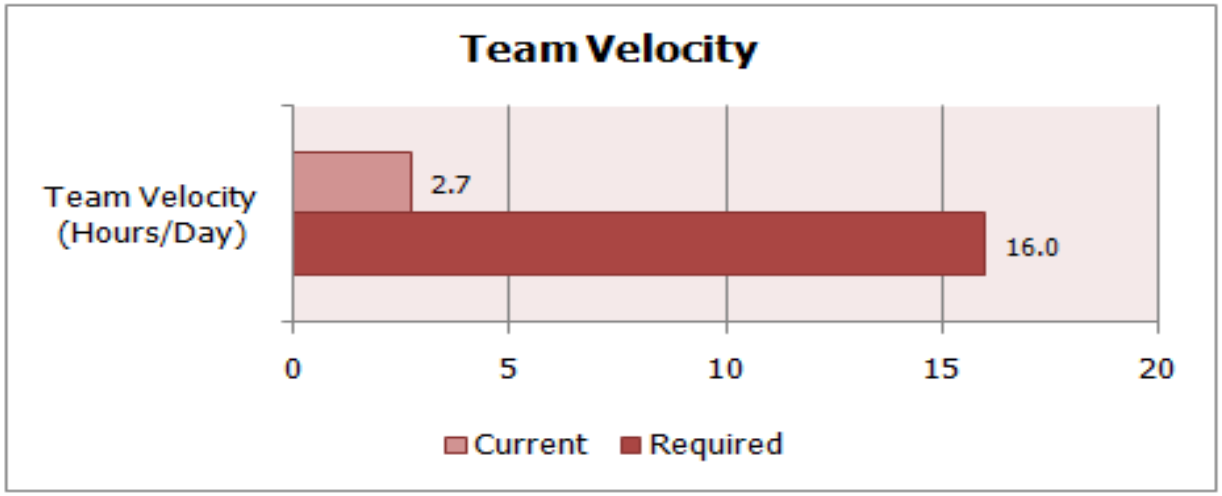
Use this sheet to track velocity when the iteration is in progress.

Work Status

	Work (Hours)	Days
Completed	216	79
Remaining	16	1

Current and Required Velocity

	Team Velocity (Hours/Day)
Current	2.7
Required	16.0



Reference: Chart Parameters Used	
Work Item Type:	Task
Iteration Path:	\Iteration 1
Area Path:	\

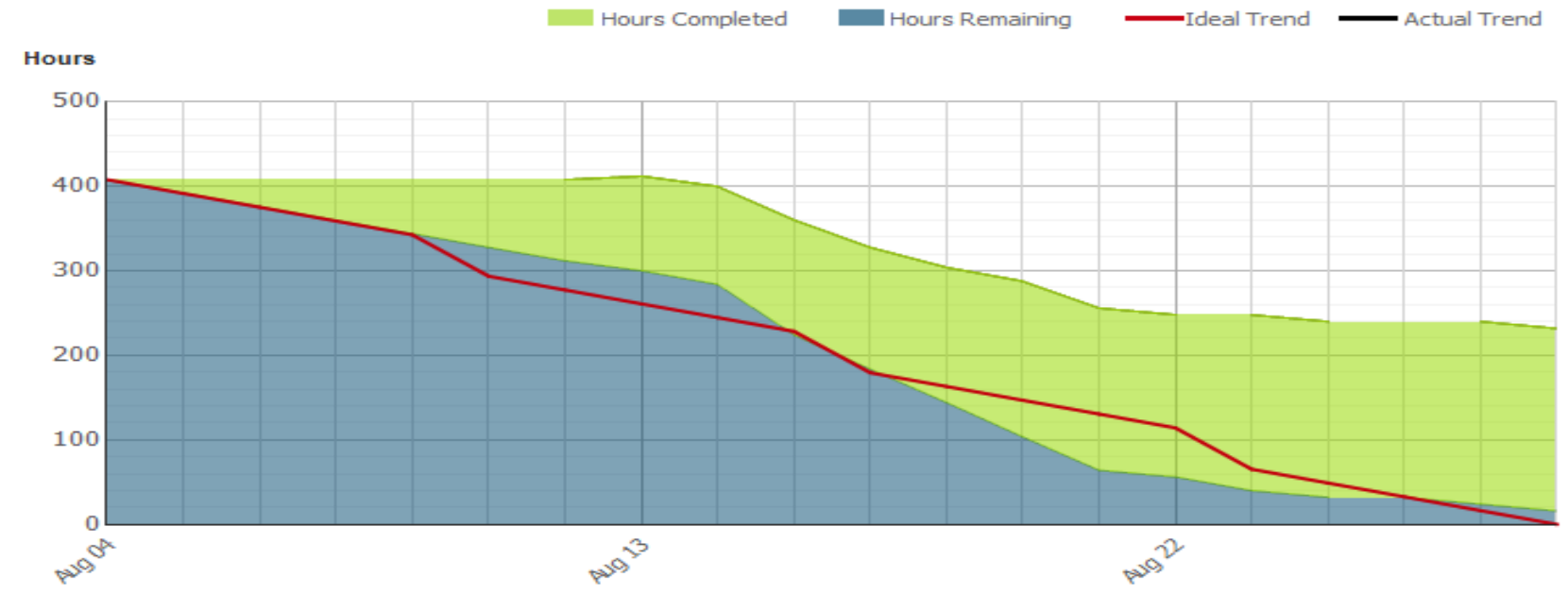
Improved Agile Reporting

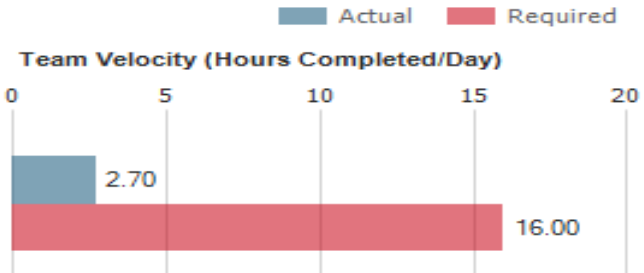
Burndown and Velocity

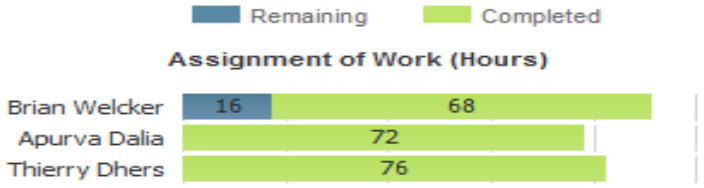
Helps you track the team's progress toward completing the work for an iteration. Shows how many hours of work the team has completed, how many hours remain, the rate of progress, and the work assigned to each team member.

Related Reports

- Status on All Iterations
- Stories Overview
- Stories Progress







Improved Agile Reporting

Stories Overview

Helps you track how far each user story has been implemented. Shows each story's actual number of hours of work remaining and completed, its acceptance test results, and the number of bugs that are linked to each story.

Related Reports

- Bug Status
- Status on All Iterations
- Stories Progress
- Test Case Readiness
- Test Plan Progress

Completed
Remaining

Passed
Failed
Not Run
Active
Resolved

	Work Progress		Test Status		
Title	% Hours Completed	Hours Remaining	Tests	Test Results	Bugs
Customer can see new functionality in their profile as they are introduced	100 %	0	3	33 % 67 %	
Customer enters personal reviews	100 %	0	5	56 % 44 %	
Admin/editor publishes customer submitted review	100 %	0	3	33 % 67 %	
Customer rates review	100 %	0	3	40 % 40 %	
Customer comments on review	13 %	112	5	100 %	
Customer searches for reviews	100 %	0	3	33 % 67 %	
Customer finds restaurant from review	100 %	0	2	33 % 67 %	
Customer finds reviews for restaurant	100 %	0	2	50 % 50 %	3

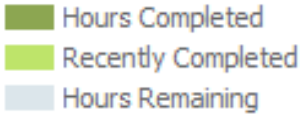
Improved Agile Reporting

Stories Progress

Helps you track recent progress for each user story. Shows each story's remaining, completed, and recently completed work.

Related Reports

- Bug Status
- Status on All Iterations
- Stories Overview



Title	Progress (% Completed)	Hours Remaining
Customer can see new functionality in their profile as they are introduced	100 %	0
Customer enters personal reviews	100 %	0
Admin/editor publishes customer submitted review	100 %	0
Customer rates review	100 %	0
Customer comments on review	13 %	112
Customer searches for reviews	100 %	0
Customer finds restaurant from review	100 %	0
Customer finds reviews for restaurant	100 %	0

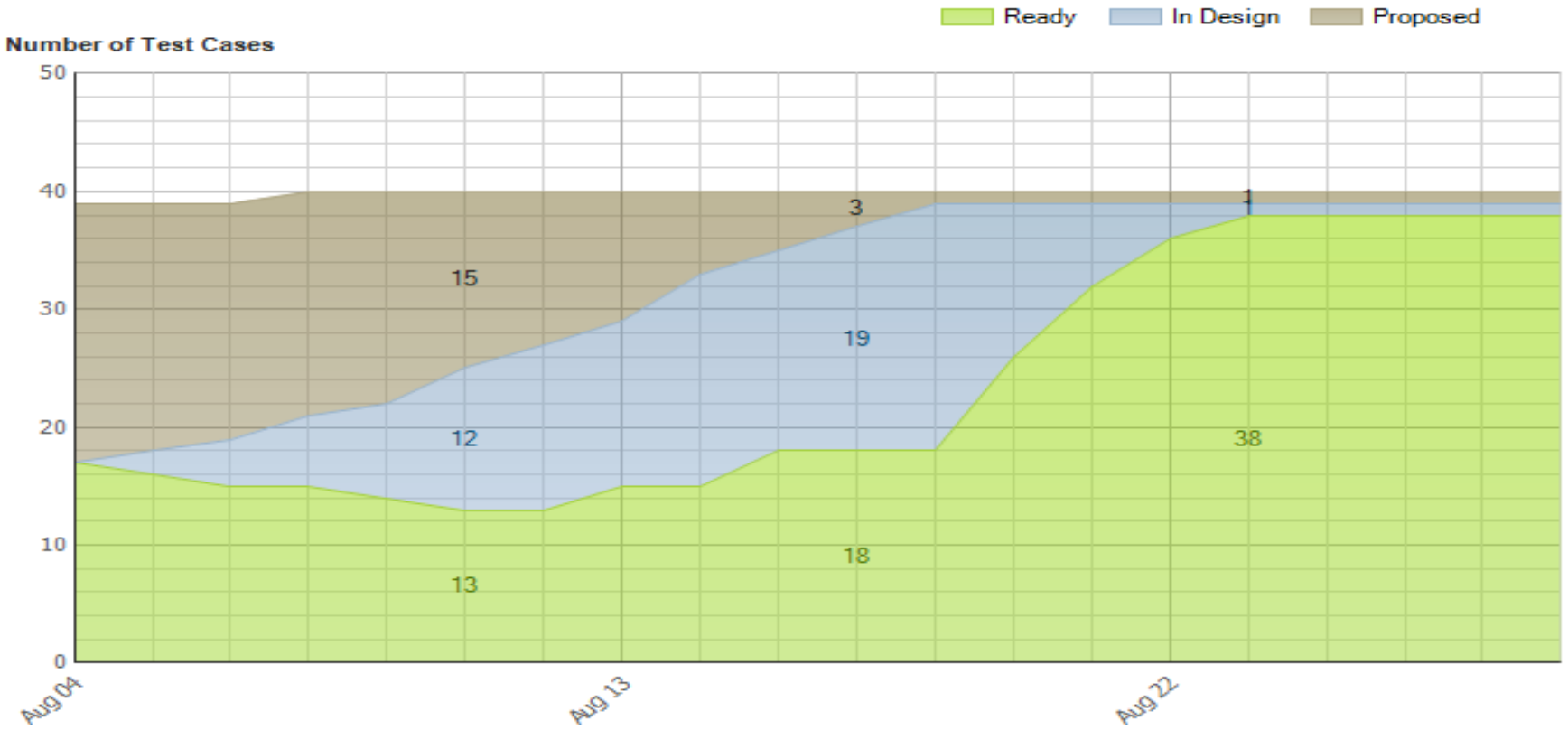
Improved Test Reporting

Test Case Readiness

Helps you track how many test cases are ready to be run. Shows the number of test cases in each state of preparation.

Related Reports

- Bug Status
- Status on All Iterations
- Test Run Results
- Test Plan Progress



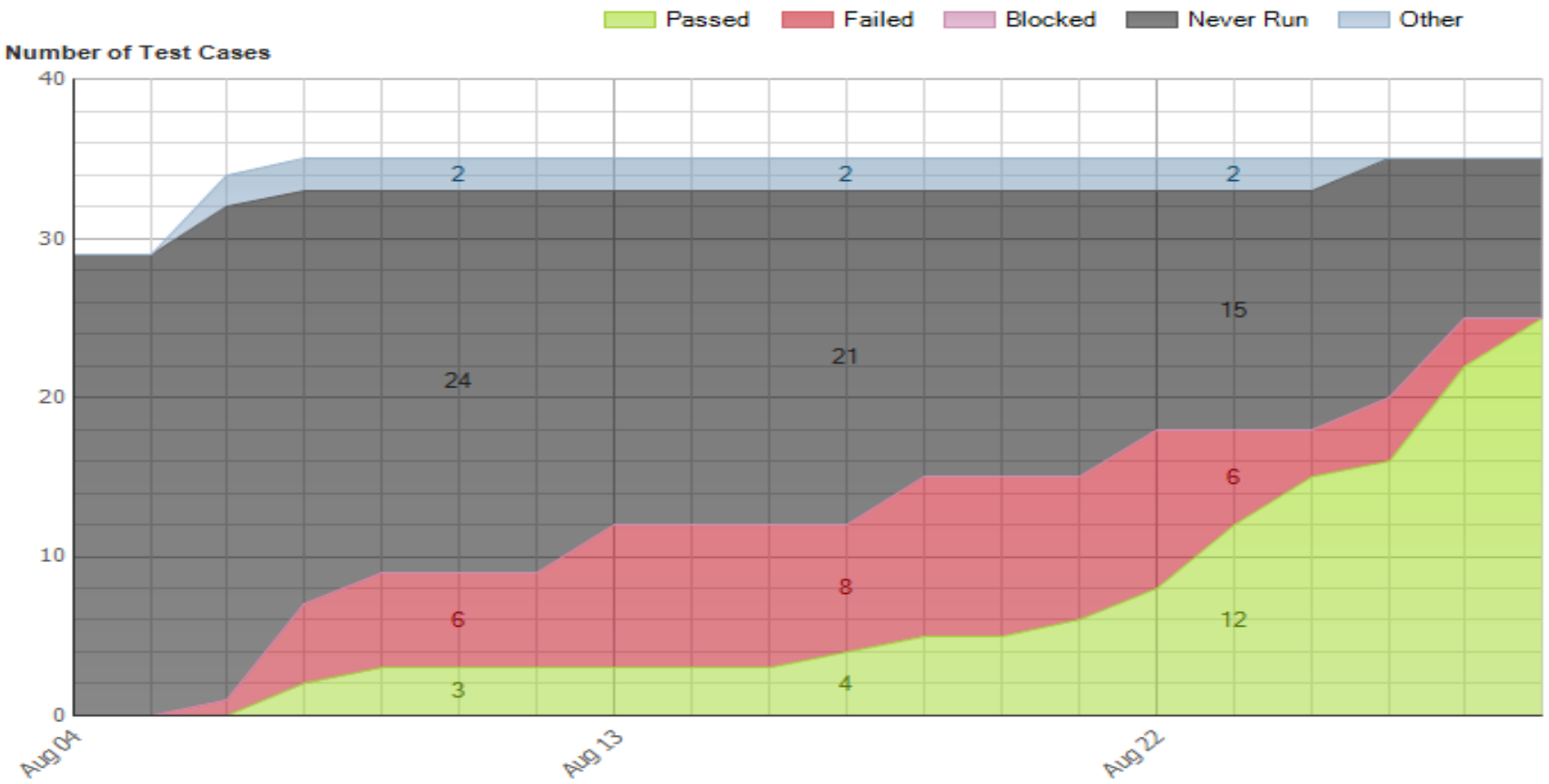
Improved Test Reporting

Test Plan Progress

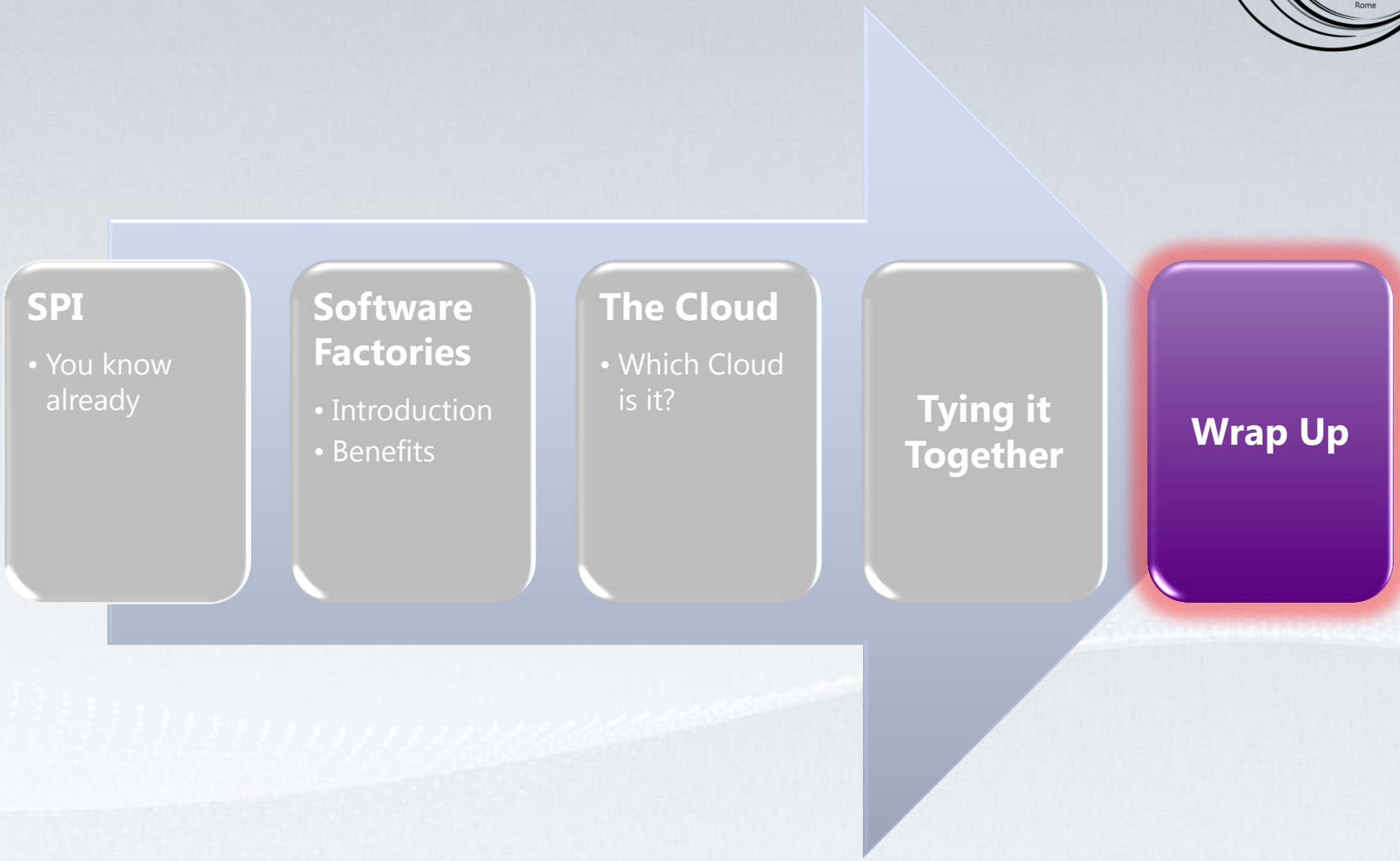
Helps you track the progress of your test plans.
Shows the results of running the tests over time.

Related Reports

- Bug Status
- Status on All Iterations
- Test Case Readiness
- Test Run Results



Outline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Software Factories
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The Cloud
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Tying it Together
Wrap Up

Questions

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