Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

2014 CEE-SEC(R)
Software Engineering Conference in Russia

The Art of Software Quality

Mark Standeaven

Moscow, October 2014

People matter, results count.

A strong Group (2013 full year)

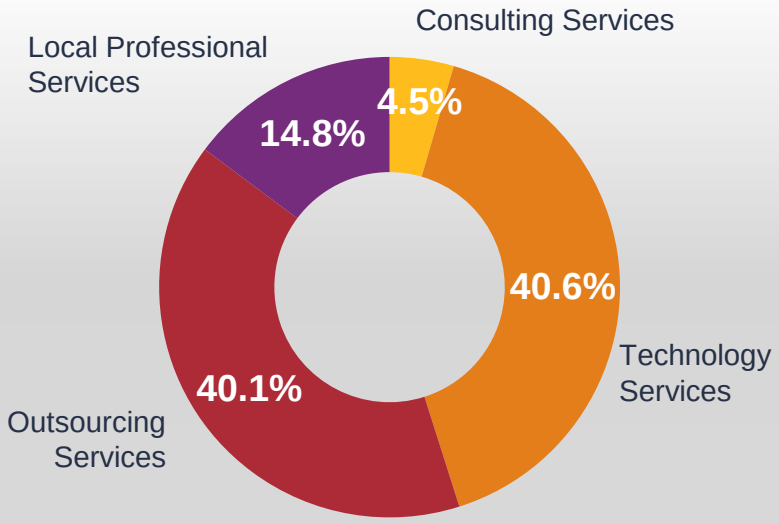
Revenue 2013: €10,092 million

- Operating margin : €857 million
- Operating profit : €720 million
- Profit for the year attributable to shareholders : €442 million
- Net cash and cash equivalents : €678 million

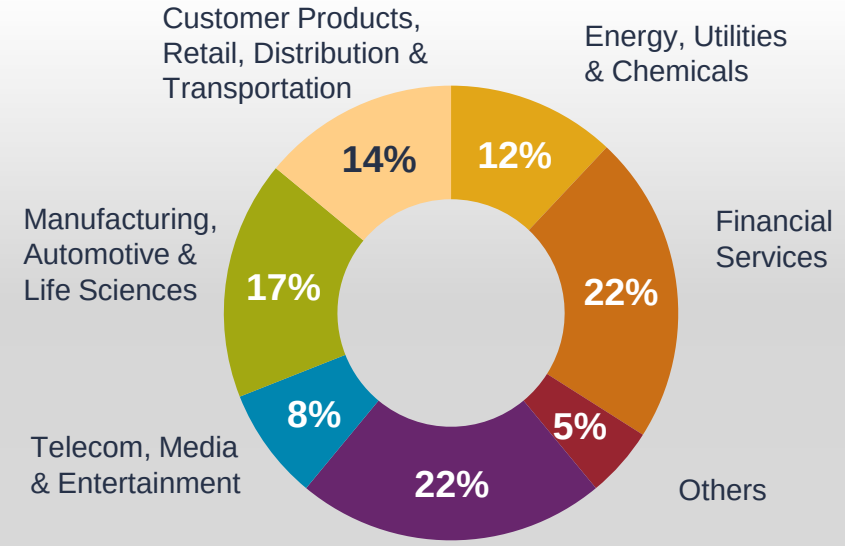
Cap Gemini S.A." is a member of the CAC40, listed in Paris
ISIN code: FR0000125338

Note: Our brand name is "Capgemini" but the name of our share on the stock exchange is "Cap Gemini S.A."

Revenue by business



Revenue by industry



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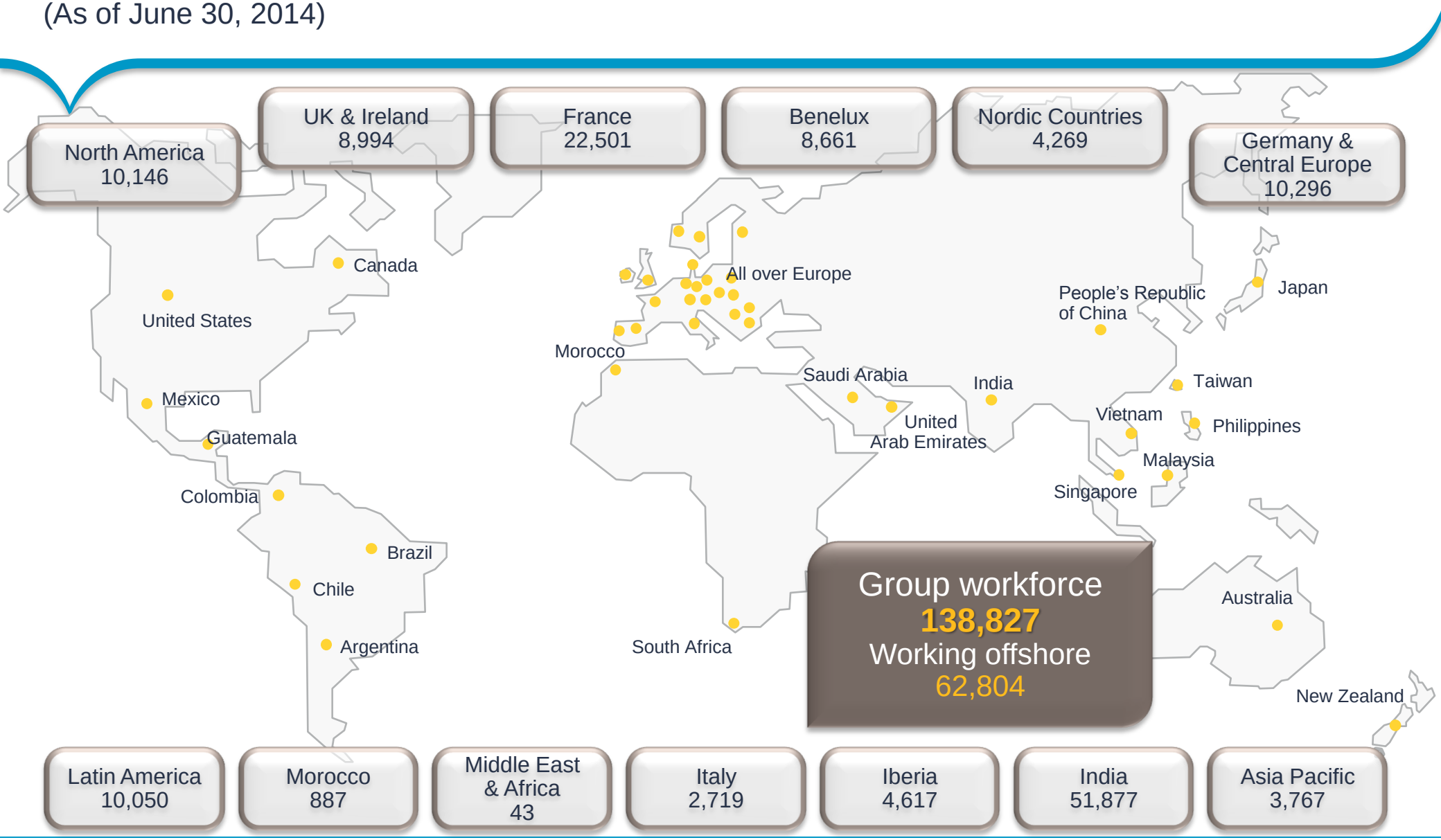
40+ countries and 120+ nationalities

(As of June 30, 2014)



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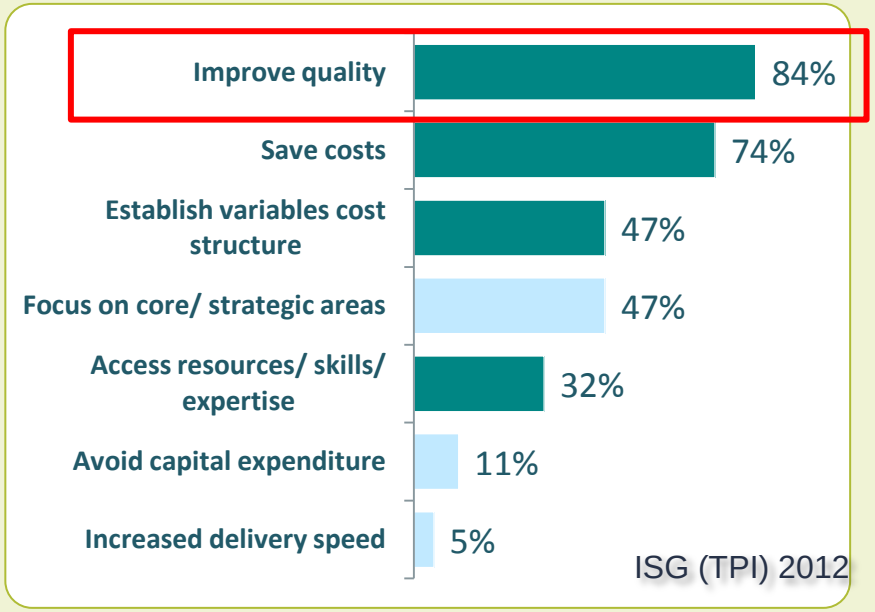
Why is this important?

Top 3 Reasons Why Clients are Undertaking Sourcing Transactions



"**Basic Unit-level errors** account for 92% of the total errors in the source code but these **count for only 10% of the defects in production**.

Bad coding practices at the system-level count for only 8% **lead to 90%** of the serious reliability, security, and efficiency issues in production.[11,12]

Meanwhile, **tracking the system-level programming errors** could **save more than half of the rework** during the building phases, while drastically decreasing the production incident rate"

OMG/SEI

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Why Automate Structural Quality Control

Software « Blood Test »

Systematic use in software quality gates leading to **a reduction in re-work** effort

Enables middle management to **test the quality** of software developed

Estimation & Productivity

« **Take care of the cows** and not the cowboys »

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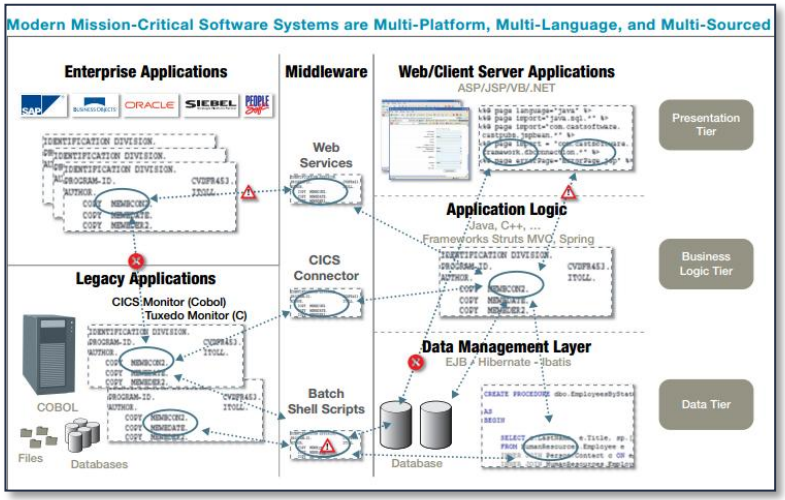
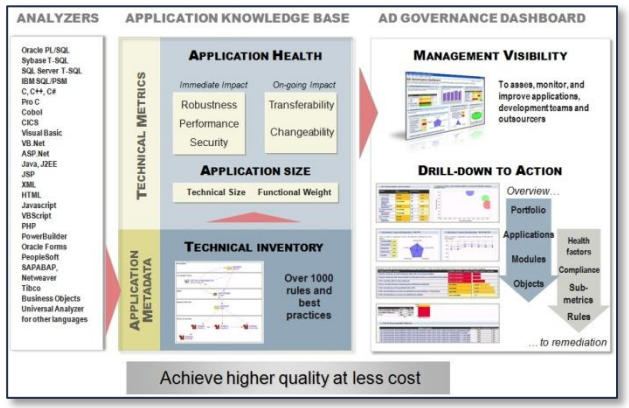
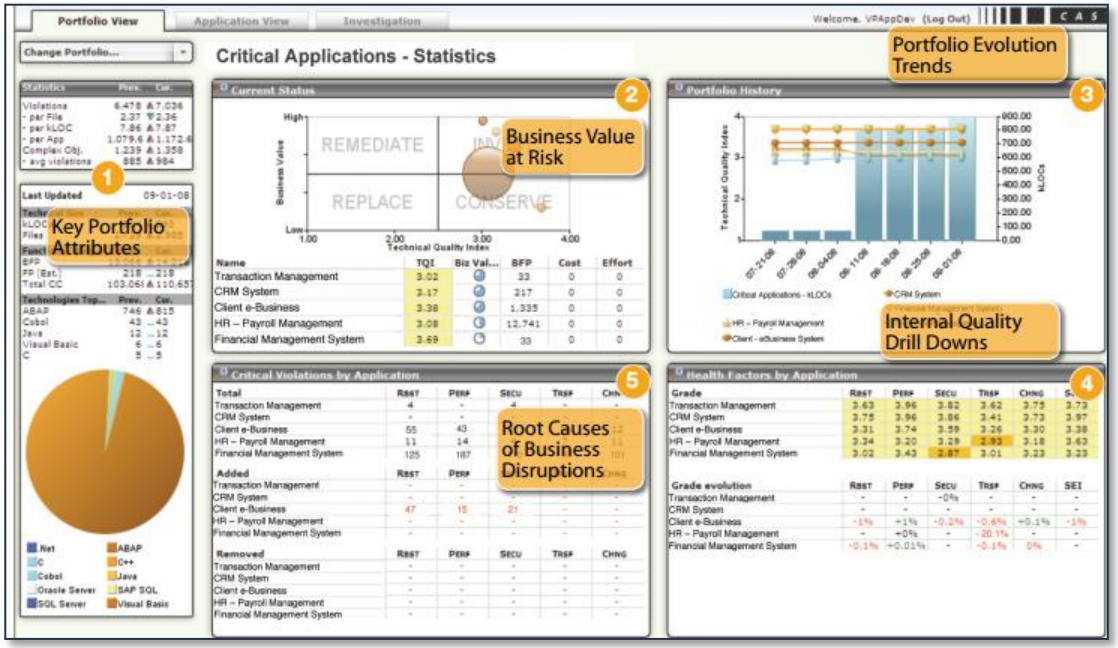
CAST Overview

CAST
ACHIEVE INSIGHT. DELIVER EXCELLENCE.





CAST AIP is a STATIC source code analyzer. It has support for 28+ technologies. CAST parsers read and semantically understand source code across all tiers of a complex business application – GUI, Logic and Data layers. The source code is converted to meta-data and is stored in a Knowledge Base (which runs on most common databases). CAST engines analyze the metadata and apply 1200+ rules and best practices to work out the Technical Quality of the Application. CAST AIP checks compliance to industry best practices on code quality standards, architectural and coding best practices.



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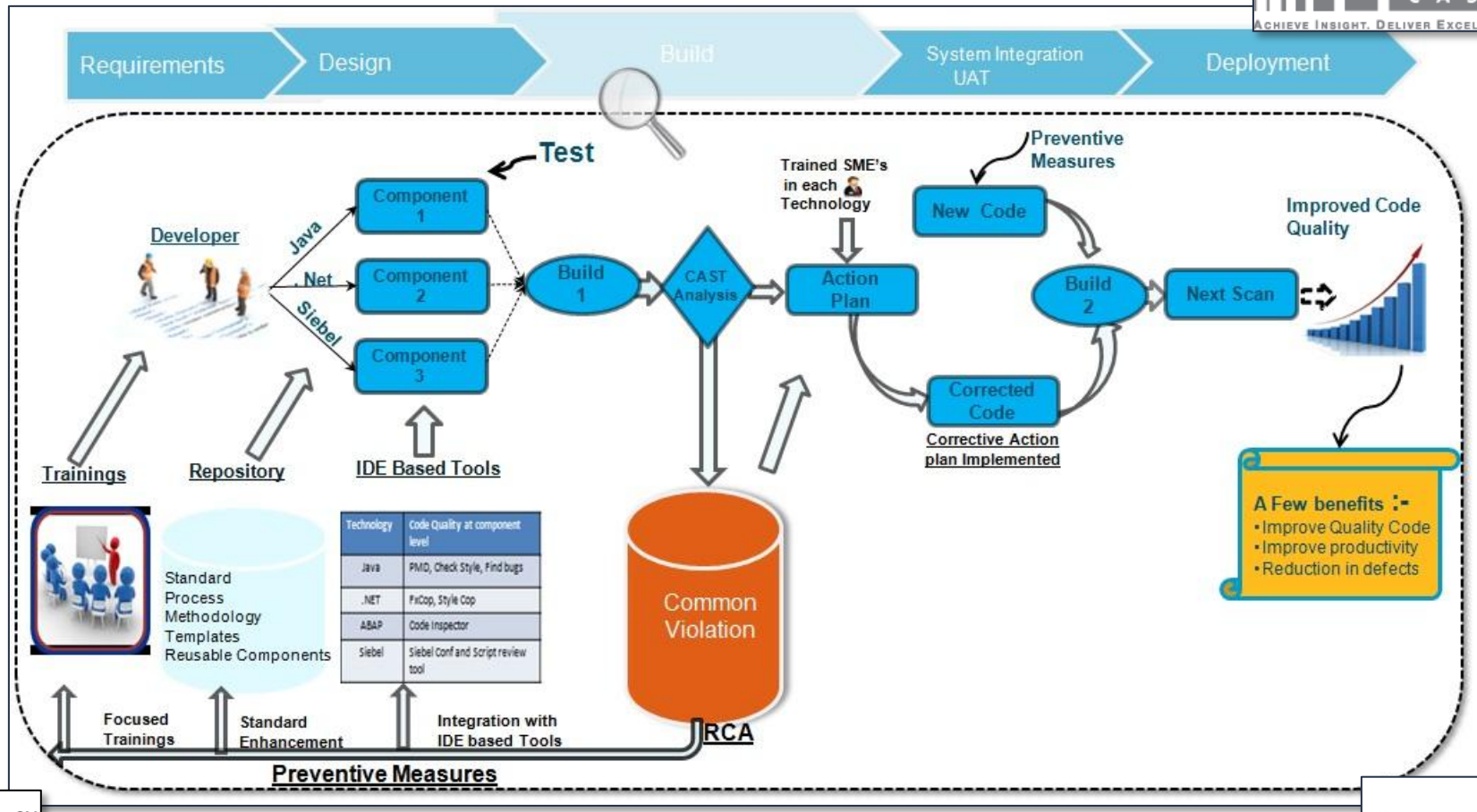
How do we do it?

Software Quality Assurance in "BUILD" (AD) projects



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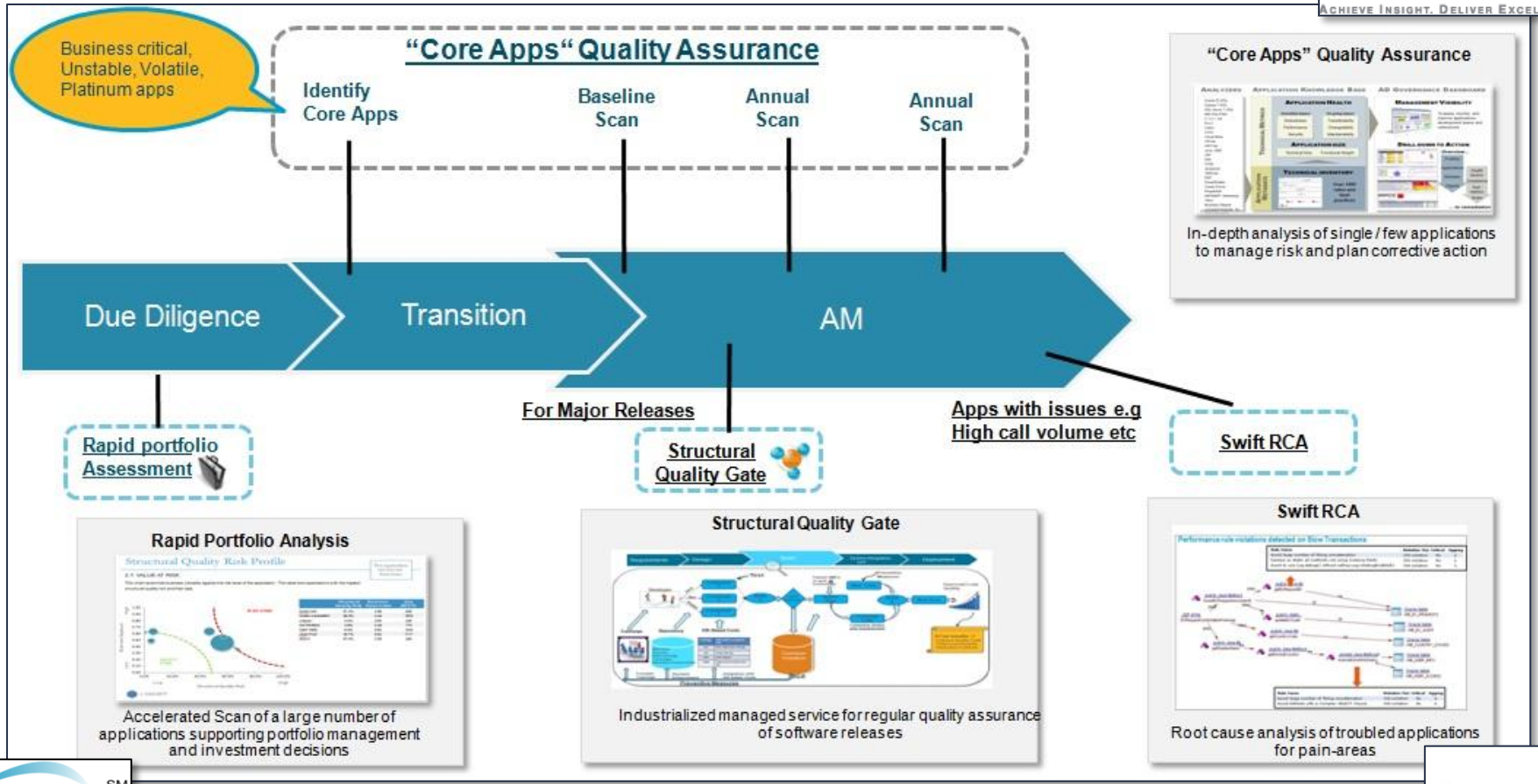
How do we do it?

Software Quality Assurance in "RUN" (AM) projects



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Shared Services Deployment was a Critical Success Factor

A Shared Service is a dedicated team which proposes standardized services to projects on specific lifecycle activity

Project 1

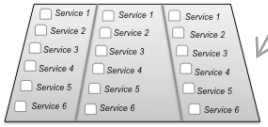
Project 2

Project 3

Shared Service

Request Workflow

Service Catalog



No Shore team

A specific Service catalog is defined for each Shared Service

Support is delivered by a no shore team

Request workflow is implemented in a ticketing tool with the same template for each service

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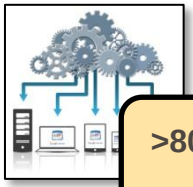
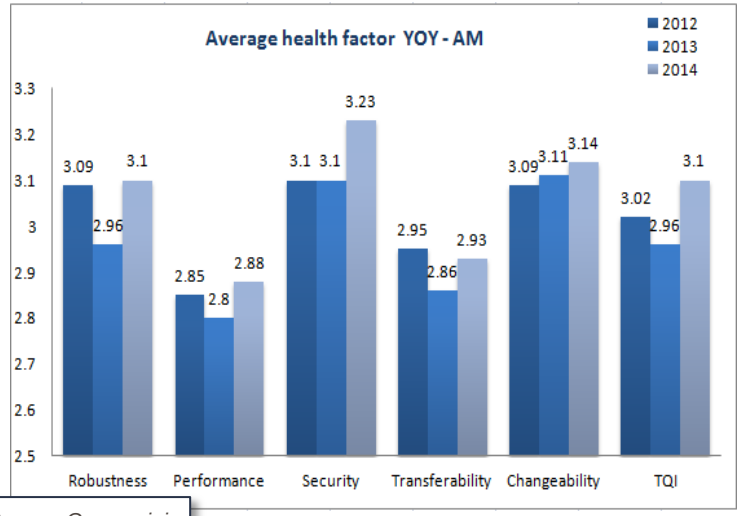
Findings

10000 FTE covered

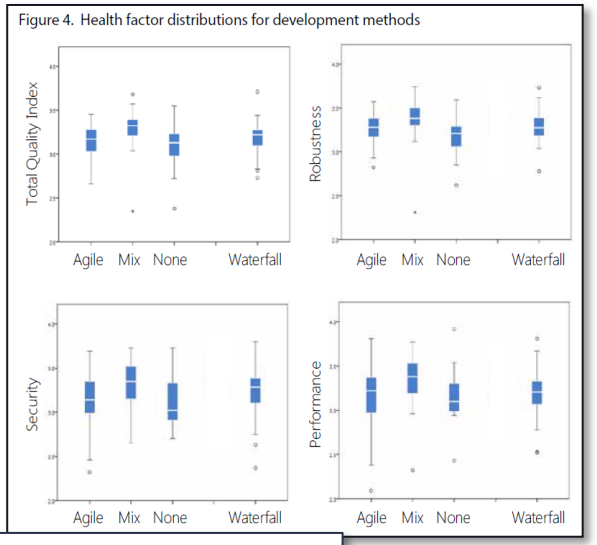


>800 applications analysed

>600 million lines of code assessed



Source: Capgemini



Source: CAST CRASH Report 2014

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Beyond Software Quality towards *Productivity*

$$Productivity = f(O_q, O_{v,}, C)$$

$$where,$$

$$O_q = Quality\ of\ the\ Output\ produced,\ O_v = Volume\ of\ Output\ produced,$$

$$C = Cost\ of\ producing\ the\ Output$$

It must be simple to understand

The cost of capturing the necessary data to calculate it should be minimal

It should not be open to multiple interpretations

The calculation should be automated

Ideally, it should be based on an external industry benchmark

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11

What could be a Productivity calculation?

Productivity (Applications Development)
=
(Quality Index) CAST Achieve Insight. Deliver Excellence
x
(Automated Function Point/Cost)

Productivity (Applications Management)
=
(Quality Variance between successive releases) CAST Achieve Insight. Deliver Excellence
x
(Automated Function Point Variance/Monthly Cost)

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