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Establishing the Business Case for Process Improvement:

Early Successes in a Government Organization
The TARIF Process Improvement Experience

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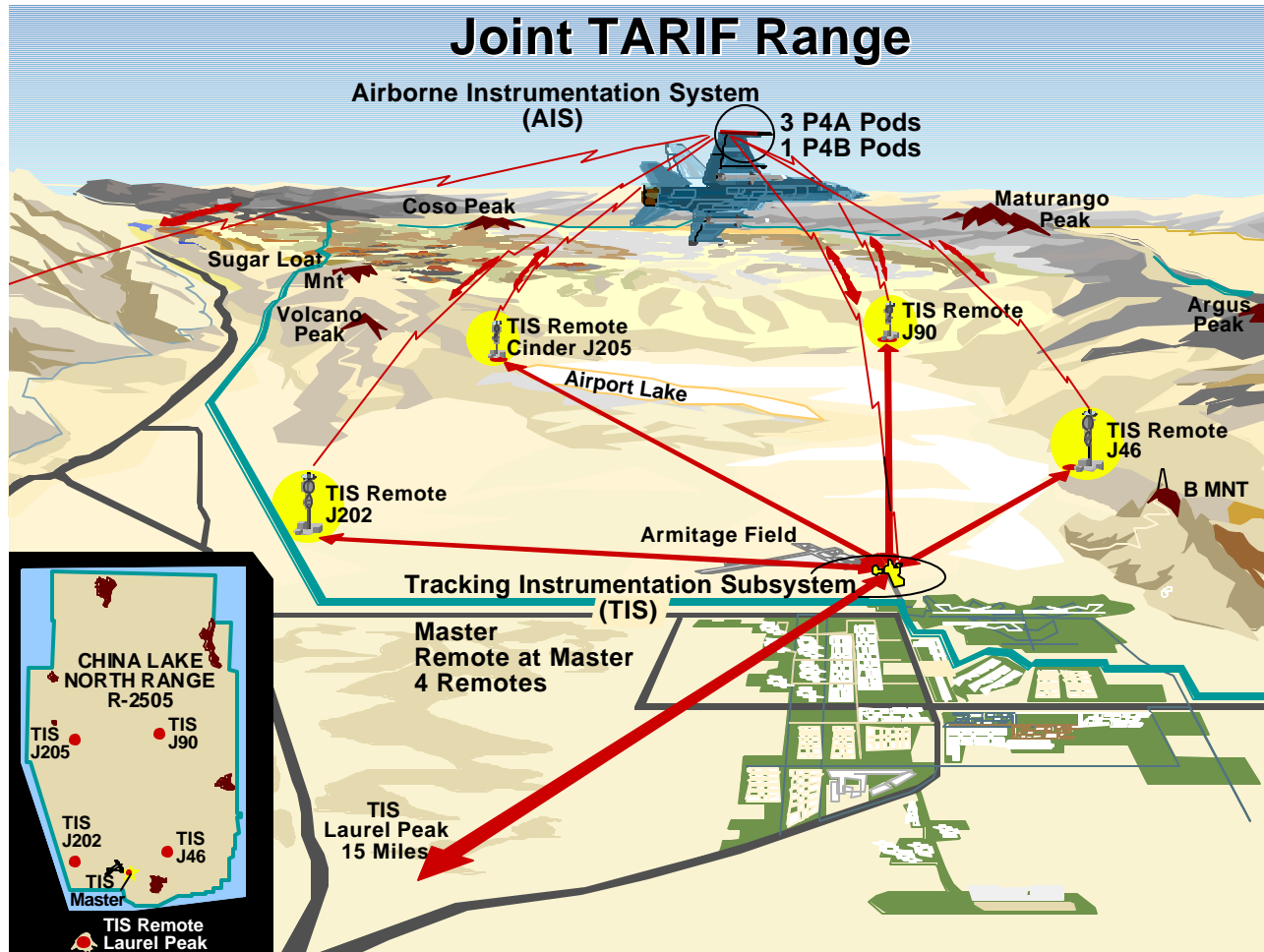TYBRIN corporation

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Overview

- **Organization profile**
  - Who is TARIF, and what makes them TARIF?

- **Approach taken**
  - What we did and why

- **What has worked for us**
  - And might work for you

- **What has not worked**
  - The mistakes you don't need to repeat

Supporting the Warfighter:
Tactical Air Ranges Integration Facility
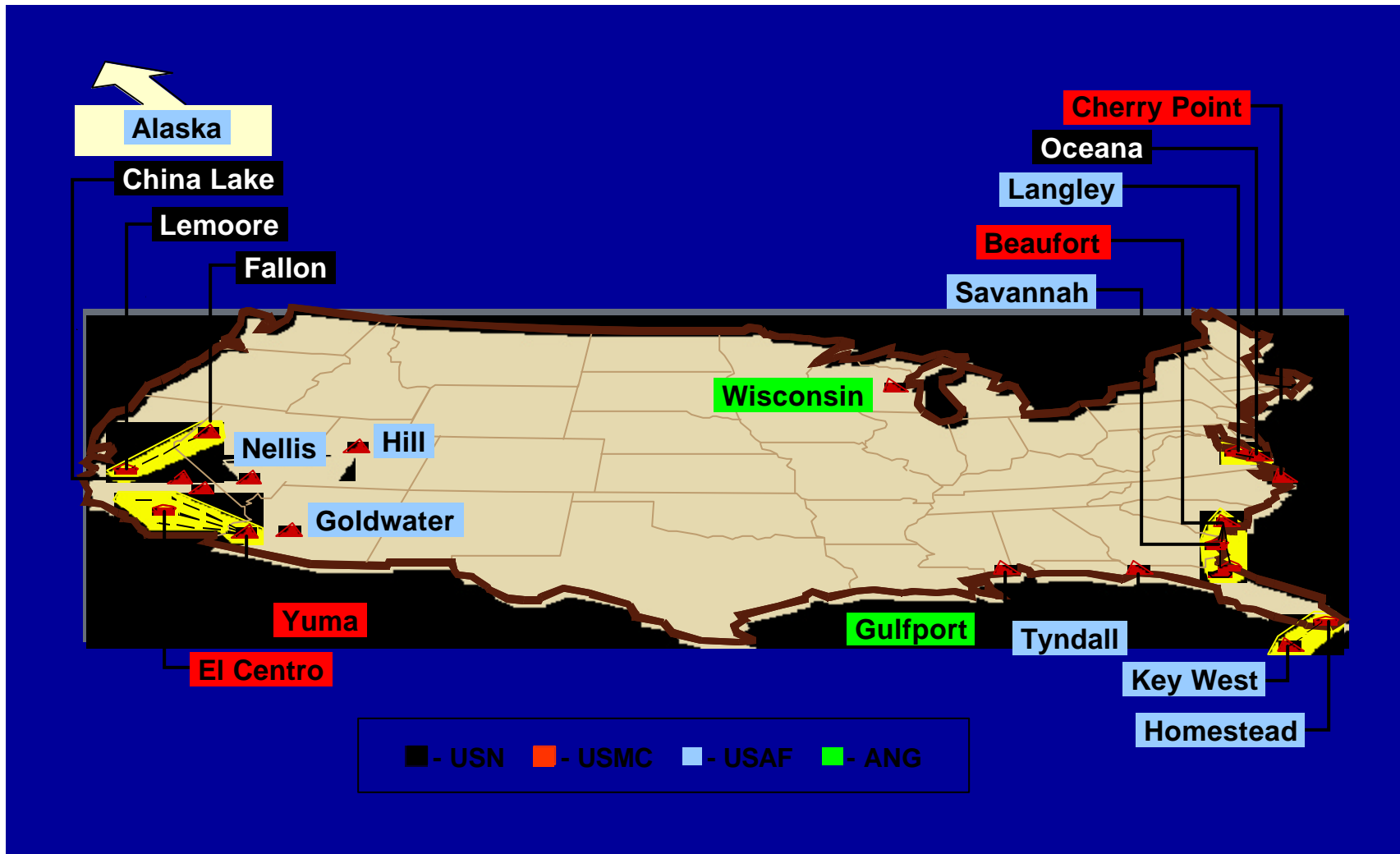

Naval Air Weapons Station

China Lake, CA

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TARIF Supports Aircrew Training

Joint TARIF Range

Airborne Instrumentation System (AIS)

3 P4A Pods
1 P4B Pods

Coso Peak

Maturango Peak

Sugar Loaf Mnt

Volcano Peak

Argus Peak

TIS Remote Cinder J205

TIS Remote J90

Airport Lake

TIS Remote J46

TIS Remote J202

B MNT

Armitage Field

Tracking Instrumentation Subsystem (TIS)

Master Remote at Master 4 Remotes

CHINA LAKE NORTH RANGE R-2505

TIS J205

TIS J90

TIS J202

TIS J46

TIS Master

TIS Remote Laurel Peak

TIS Laurel Peak 15 Miles

SSA:
Navy TACTS
Air Force ACTS

Aircrew Debriefing System

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Our Customers:
TACTS/ACTS Ranges

Alaska

China Lake

Lemoore

Fallon

Cherry Point

Oceana

Langley

Beaufort

Savannah

Wisconsin

Nellis Hill

Goldwater

Yuma

El Centro

Gulfport Tyndall

Key West

Homestead

■ - USN   ■ - USMC   ■ - USAF   ■ - ANG

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Organization Profile
Who is TARIF?

- **Primary software product –
Control and Computation Subsystem (CCS)**

  – Evolved over the last 30 years

  – 250K lines of Fortran and C++ code on a PC

- **The development team**

  – A mix of a dozen Government and contract software engineers

  – Mostly very senior engineers who are domain experts, with the core team having been together for over ten years

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Organization Profile
TARIF Process Improvement History

- **TARIF has a long history of process improvement**

- **Progress has been continual, but necessarily slow due to system complexity and high work loads**

- **Four acceleration factors**

  - TARIF management is committed to this CMMI effort

  - TYBRIN's proposal for this contract included a commitment to help get the TARIF to CMMI level 3

  - Brought in Natural SPI as CMMI consultants

  - A process improvement lead was appointed

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High-Level Business Goals

- **Establish processes that deliver high quality systems to sponsors and ranges on schedule and within budget**

- **Ensure TARIF's continued success is not dependent upon specific individuals**

- **Achieve CMMI (Staged Representation) Level 3**

- **Quantitatively analyze and understand organizational processes and how those processes meet TARIF's business needs**

Organization Profile
What makes them TARIF?

- **TARIF's cultural flavor**

  - Comfortable testing procedures in production

  - Heroes treasured over planners

  - Peer reviews are used and add value

  - Meetings do much more than communicate information

  - All decisions are by committee and consensus

  - Organization and responsibility is assumed, not documented

  - Open door leadership is used to manage the organization

  - The people in leadership positions are liked

  - The organization is schedule driven, a release gets delivered every 6 months with the functionality that is complete

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Approach Taken

- **Taking into account the cultural flavor of TARIF when implementing change, and what it is costing:**

  – Don't worry about a procedure or template being perfect before putting it into play

  – Finding a way to make the planners heroes

  – Building on the current peer review process, don't replace it

  – Using the existing meetings, don't create new ones

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Approach Taken (2)

- **Taking into account the cultural flavor of TARIF when implementing change, and what it is costing (continued):**

  – Empowering the decision making committees

  – Adjusting the organization as needed

  – Using the well-liked leaders and their knowledge of what will work

  – Could make the process improvement project a schedule-driven crisis

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Approach Taken (3)

- **Timing is important; start the process improvement at the right time. Some timing factors for TARIF are:**

  - There are business problems to solve

  - There is competition for the product

  - There is someone to solve the problems for

  - The organization has some time and money to spend on change

  - There were some native processes already growing

  - The organization was not on the brink of a reorganization

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Approach Taken (4)

- **Chose the correct model for the business:**

  - They deliver integrated HW/SW systems to their customers, the CMMI makes sense

- **Assessed the current state against the model:**

  - Conducted a baseline appraisal to find out where they are

- **Determined what requirements needed to be fulfilled to meet the business goals:**

  - Defined what needed to be changed, to meet the goals

Approach Taken (5)

- **Prioritized the requirements**
  - Some things needed to be in place first, like a library, and you cannot do it all at once

- **Plan the effort as a project**
  - Know what it will take before you begin

- **Staff the effort with the right level and type of resources**
  - On site, part-time process improvement project lead
  - On site, part-time process improvement project manager
  - On site and off site support by part-time consultants
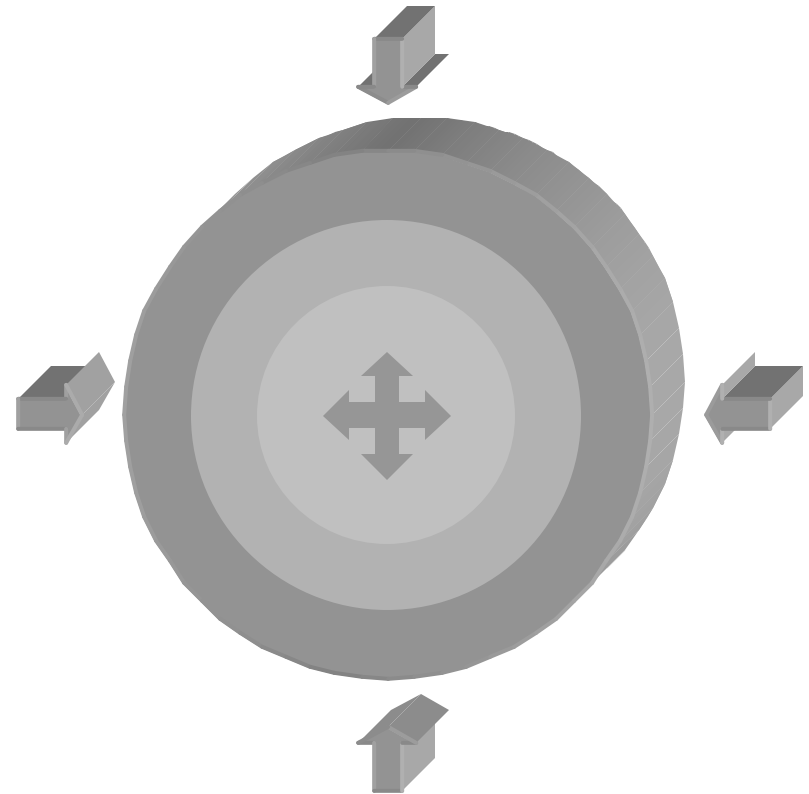
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Two-Pronged Approach: You Can't Outsource Process Improvement

- **Outside-In: Natural SPI**

  - Process improvement expertise

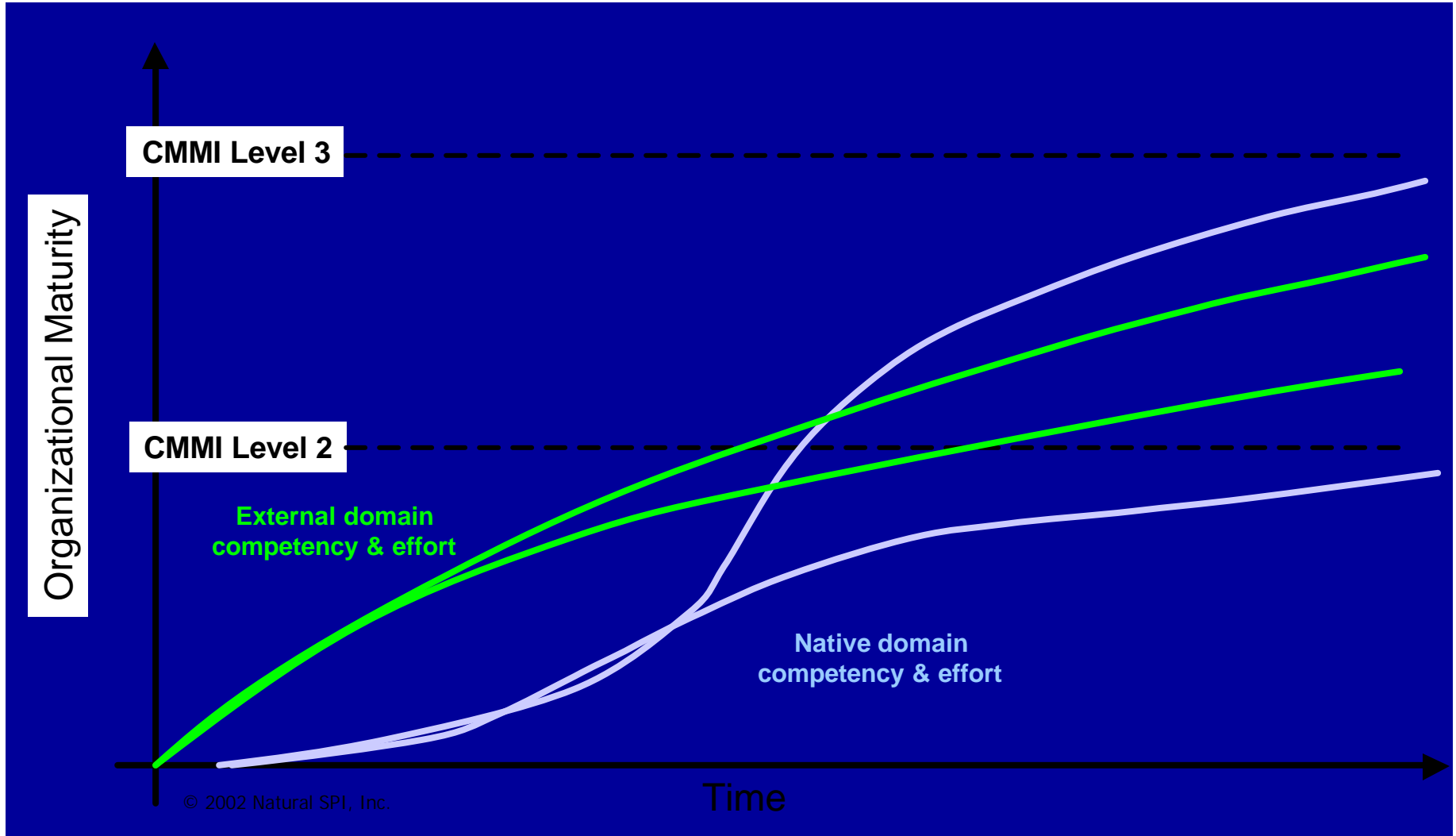 - Frameworks and infrastructures

  - Support mechanisms

  - Tailored for TARIF

- **Inside-Out: TARIF**

  - Management processes

  - Engineering processes

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Consultant – Client Relationship:
Roles Should Reverse as Maturity Grows

Organizational Maturity

CMMI Level 3

CMMI Level 2

External domain competency & effort

Native domain competency & effort

Time

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Approach Taken (6)

- **Manage the effort as a project**

  – Track what is being done and what isn't

  – Replan when necessary

  – Define your success criteria and celebrate your successes

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What Has Worked

Traditional Approach

- Assuming the organization has no process and starts from scratch

- Forming teams for each process area and writing procedures that mimic the CMMI

- Assuming the organization is different and has to reinvent process improvement

- "Slash-and-burn" approach; delete *.* on processes and start over

- Preaching process but not practicing it

Our Approach

- Knowing the starting point through a gap analysis appraisal

- Prioritizing the process improvements through business need and critical path

- Bringing in outside CMMI expertise to jump-start the effort using selected standard approaches

- Building on and leveraging existing best practices

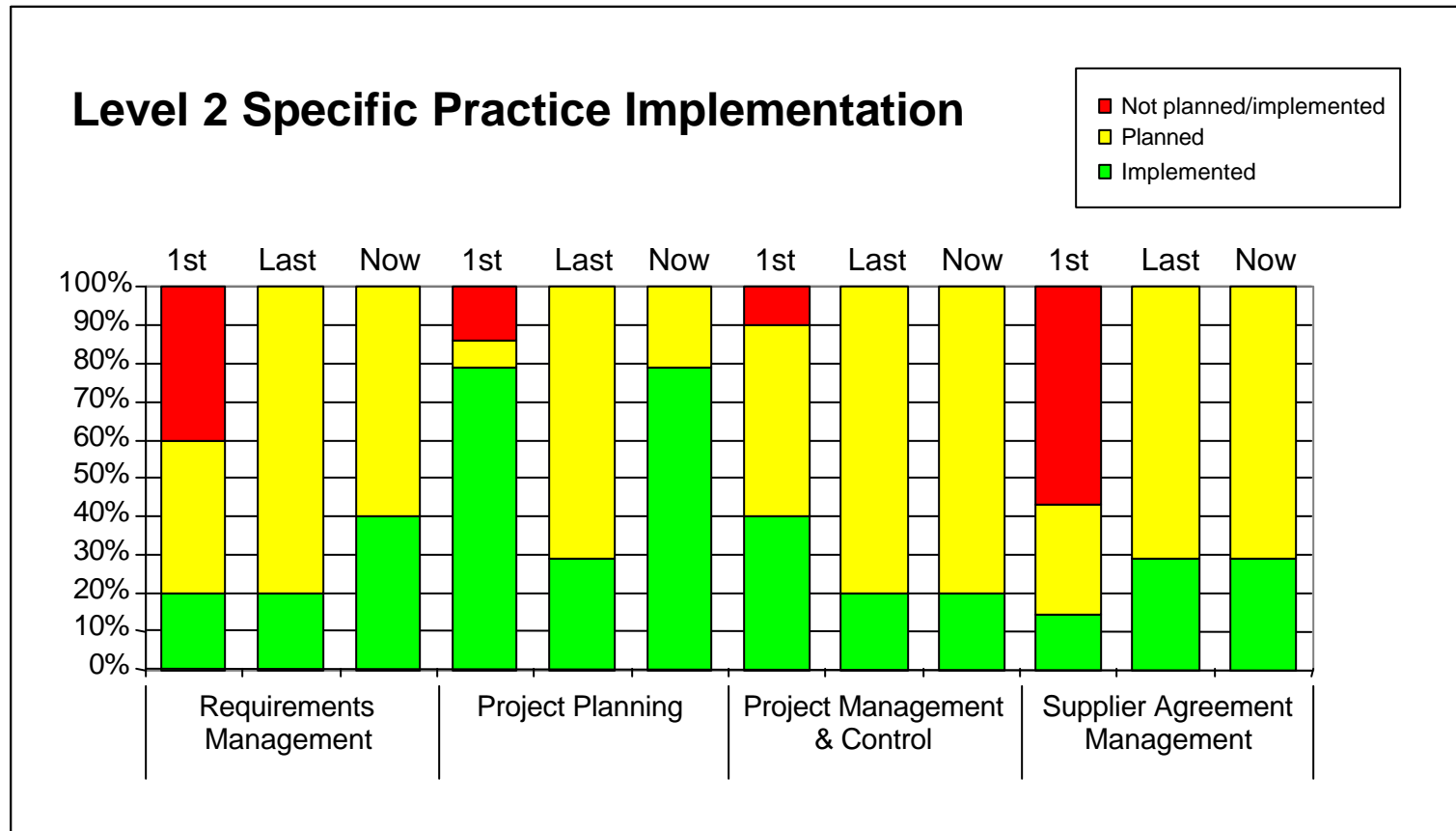- Planning and managing the process improvement <u>project</u>

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What Has Worked: Tracking Progress

- **Important to communicate progress**

- **Monthly status reports**

- **The visual view - two useful tools**

  - Quilt charts

  - First/Last/Now charts

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Quilt Chart:
Level 3 Specific Practices Satisfied

CMMI Level 3 Specific Practices																		
Specific Practice / Process Area	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
RD	N	P					P	P	P			N	N	P	P	P			
TS	P	N	P				N	N	N	P		N	S						
PI	N	N	N				P	N				N	S	P	S				
VER	N	N	N				N	N	N			N	P	N					
VAL	S	S	S				S	S											
OPF	S	S	S				S	S	P	P									
OPD	P	S	N				P	P											
OT	P	S	P	N			N	S	N										
IPM	N	P	P	P	P		P	P	S			P	P				P	P	P
RSKM	S	P	N				P	P				P	P						
IT	P	P	P				S	S	S	P	P								
DAR	S	S	N	P	P	P													
OEI	P	N	N				N	N	P										

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First/Last/Now Chart:
L2 Specific Practice Implementation

Level 2 Specific Practice Implementation

Legend:
- 🟥 Not planned/implemented
- 🟨 Planned
- 🟩 Implemented

Categories (each with 1st / Last / Now bars):
- Requirements Management
- Project Planning
- Project Management & Control
- Supplier Agreement Management

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What Has Not Worked

- **The organization has a history of false starts**

  – Escape velocity not achieved

- **The amount of time the project lead has been able to spend on the process improvement effort has not been sufficient**

- **The engineers are too good**

- **Incentives for planners vs heroes is not in place yet, crisis driven**

- **Change is hard and takes time**

- **Change is iterative**

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Requirements for Change

Vision + **Skills** + **Incentives** + **Resources** + **Action Plan** → **Change**

+ **Skills** + **Incentives** + **Resources** + **Action Plan** → **Confusion**

Vision + [ ] + **Incentives** + **Resources** + **Action Plan** → **Anxiety**

Vision + **Skills** + [ ] + **Resources** + **Action Plan** → **Slow Change**

Vision + **Skills** + **Incentives** + [ ] + **Action Plan** → **Frustration**

Vision + **Skills** + **Incentives** + **Resources** + [ ] → **False Starts**
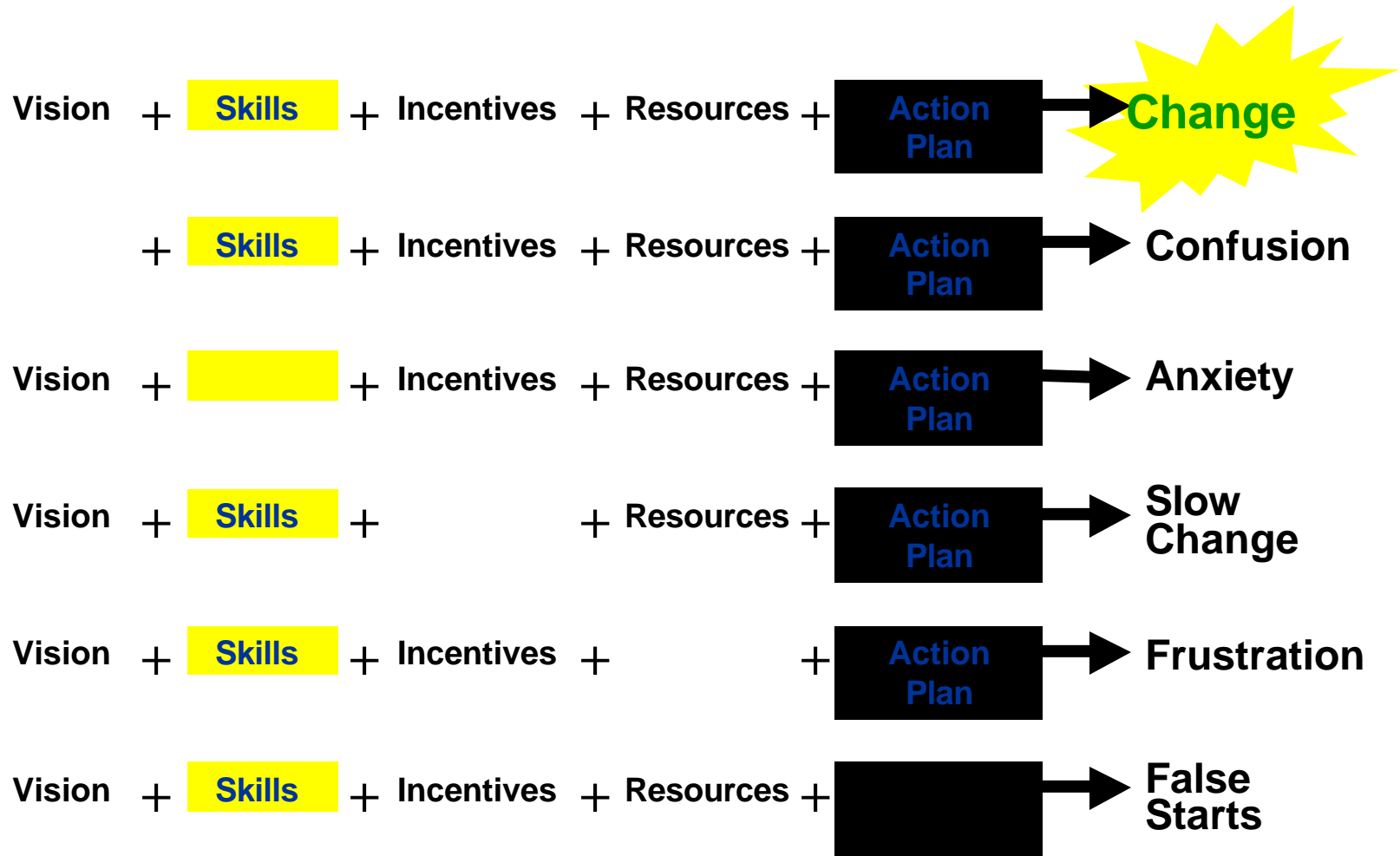
(from the American Management Association)

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What we have learned
and you don't have to relearn

- **Have a business need for change**

- **Use the correct improvement model for your business**

- **Determine where you are and where you want to be**

- **Prioritize the changes**

- **Jumpstart the effort with external expertise**

- **Apply the correct amount and type of resources**

- **Run the effort as a project**

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Questions?

Who can I contact for more info?

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