



# **“Why Coaches are Needed in Software Process Improvement”**

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## The Motivations for This Topic

- ◆ ***Assumption:*** Coaches work in software process improvement efforts everywhere.
- ◆ ***Assumption:*** The coach's role is not well understood. As a result, organizations often confuse it with other roles and fail to use coaches well.
- ◆ ***Assumption:*** Software process improvement teams will perform better when their coaches do, just as sports teams with good coaches usually perform better than teams with poor coaches.
- ◆ ***Assumption:*** Software process improvement coaches would perform better if organizations knew how to use them.



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# Outline

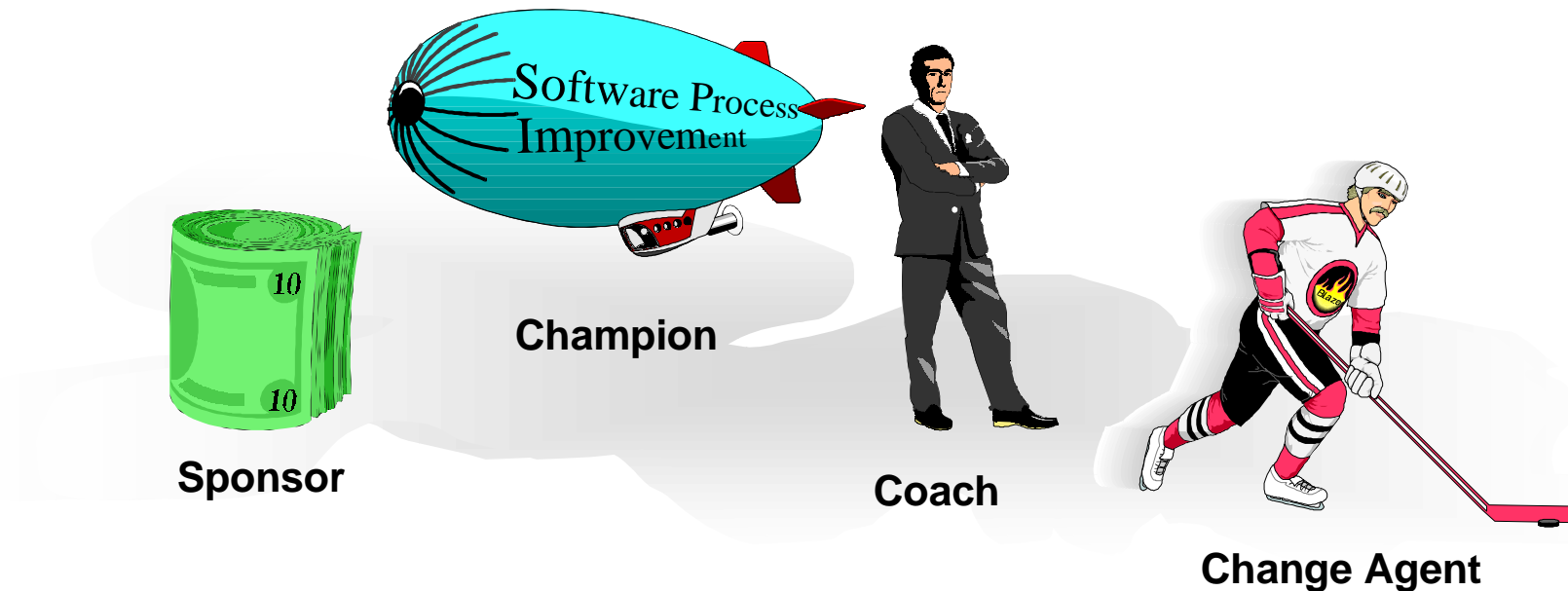
## Introduction

- Main Points
- Glossary

- ◆ **Software Process Improvement Activities**
- ◆ **Software Process Improvement Roles**
- ◆ **Some Signs of a Good Coach**
- ◆ **Conclusion**

## Main Points

- ◆ It's useful to group software process improvement activities into **FOUR** major *Roles*, Sponsor, Champion, Coach, and Change Agent.



## Main Points (cont'd)

- ◆ **The Coach combines detailed knowledge of the new practices and tools with leadership skills in change management.**
- ◆ **Each of the four Roles could be filled by one or more Personnel in one or more Positions within a project or organization.**

# Glossary

- ◆ **Role** - A collection of activities. A role has a name, such as Sponsor, Champion, Coach, or Change Agent defined by this presentation and by much literature on software process improvement, and on technology introduction.
  
- ◆ **Personnel** - One or more people in a project or its parent organization. Personnel have their own individual names.
  
- ◆ **Position** - A box on an organizational chart for a project or parent organization. A position has a title assigned by the project or organization, such as Project Manager, Technology Director, Quality Manager, SEPG Director, Process Action Team (PAT) Member, Software Engineer, Software Requirements Analyst, etc.

## Bibliography

- ◆ **Fowler, Priscilla and Stan Rifkin, *Software Engineering Process Group Guide*, Technical Report CMU/SEI-90-TR-24, Pittsburgh, PA: Software Engineering Institute, 1990.**
- ◆ **Humphrey, Watts S., *Managing the Software Process*, Reading, MA: Addison-Wesley, 1990.**
- ◆ **Rogers, Everett M., *Diffusion of Innovations*, New York, NY: The Free Press, Fourth Edition, 1995.**



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# Outline



## ● Introduction

## ◆ Software Process Improvement Activities

- One view of software process improvement stages
- Some key activities of software process improvement

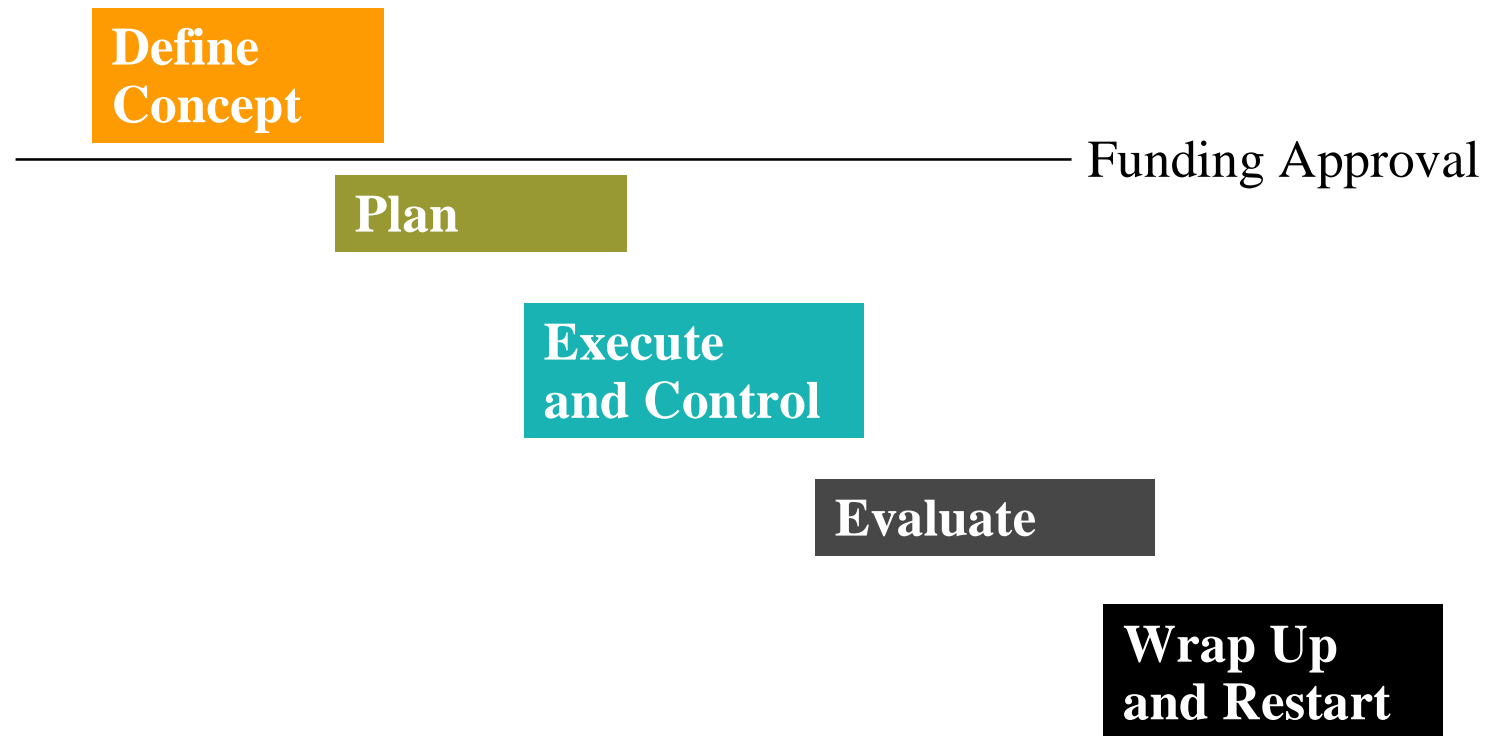
## ◆ Software Process Improvement Roles

## ◆ Some Signs of a Good Coach

## ◆ Conclusion



# One View of Software Process Improvement Stages



# Some Key Activities in Software Process Improvement

- ◆ **Conceive a process improvement effort**
- ◆ **Refine the idea into a proposal for a process improvement initiative or project**
- ◆ **Obtain funding for the proposed project**
  - explain the idea and the proposal
  - supply a rationale for spending money on process improvement
  - provide adequate resources (including funds) to carry out the project
- ◆ **Plan the process improvement project**
  - decide what the project must do (the activities and tasks)
  - decide how it will be done...what tools, methods and procedures will be used?
  - decide who will do it...how will they be organized?
  - define the project schedule

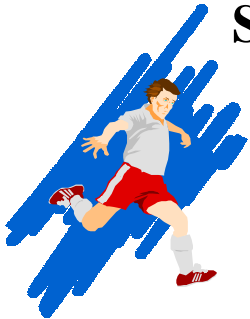
## Some Key Activities in Software Process Improvement (cont'd)

- ◆ **Execute the plan, and control the project**
  - select appropriate infrastructure and training for project members
  - supply appropriate infrastructure and training
  - carry out improved practices as trained
  - monitor project activities and project products
  - correct defects in activities and products
  - update the project plan
- ◆ **Evaluate the project results and identify possible improvements**
  - did the project do what it planned to do? did it do it well enough?
  - what could be done to improve on the project's results?
- ◆ **Wrap up the project, and conceive the next one**
  - complete all remaining planned activities
  - conceive an effort to improve on the project's results
- ◆ **Repeat the cycle**

# Outline

- **Introduction**
- **Software Process Improvement Activities**

## **Software Process Improvement Roles**



- A common grouping of activities into three roles
- A problem with the common grouping
- Activities that require technical knowledge of improved practices
- Activities that require leadership skills in technology introduction
- A better grouping of activities into FOUR roles
- Sponsor Role
- Champion Role
- Coach Role
- Change Agent Role
- Roles are Not Personnel or Positions
- ◆ **Some Signs of a Good Coach**
- ◆ **Conclusion**

# A Common Grouping of the Key Activities into Three Roles

## ◆ **Sponsor**

- provide adequate resources (including funds) to carry out the project

## ◆ **Champion**

- conceive a process improvement effort
- refine the idea into a proposal for a process improvement initiative or project
- explain the idea and the proposal
- supply a rationale for spending money on process improvement
- decide what the project must do (the activities and tasks)
- decide who will do it...how will they be organized?
- supply appropriate infrastructure and training
- monitor project activities and project products
- update the project plan
- conceive an effort to improve on the project's results

# A Common Grouping of the Key Activities into Three Roles (cont'd)

## ◆ Change Agents

- decide how it will be done...what tools, methods and procedures will be used?
- define the project schedule
- select appropriate infrastructure and training for project members
- carry out improved practices as trained
- correct defects in activities and products
- complete all remaining planned activities
- did the project do what it planned to do? did it do it well enough?
- what could be done to improve on the project's results?

# A Problem with the Common Grouping



- ◆ It allocates activities to some Roles that the Personnel assigned to those Roles in many projects or organizations will not know how to perform:
  - Some activities require technical knowledge of improved practices that cannot be expected
  - Some activities require leadership skills in technology introduction that cannot be expected.

# Activities That Require Technical Knowledge of Improved Practices

- ◆ **Plan the process improvement project**
  - decide what the project must do (the activities and tasks)
  - decide how it will be done...what tools, methods and procedures will be used?
  - define the project schedule
- ◆ **Execute the plan, and control the project**
  - select appropriate infrastructure and training for project members
  - monitor project activities and project products (interim progress, “earned value,” etc.)
  - correct defects in activities and products
  - update the project plan
- ◆ **Evaluate the project results...**
  - did the project do what it planned to do? did it do it well enough? (e.g., did the project satisfy the goals of a CMM KPA?)



# Activities That Require Leadership Skills in Technology Introduction

- ◆ **Plan the process improvement project**
  - decide how the activities and tasks will be done...what tools, methods and procedures will be used?
  - decide who will do it...how will they be organized?
  - define the project schedule
- ◆ **Execute the plan, and control the project**
  - select appropriate infrastructure and training for project members
  - reward exceptional performance, discourage poor performance
  - correct defects in activities and products
  - update the project plan

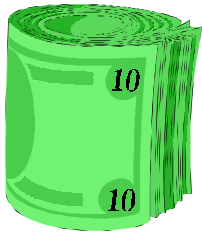
# A Better Grouping of the Key Activities into FOUR Roles

- ◆ ***Sponsor (has discretionary control of resources)***
  - provide adequate resources (including funds) to carry out the project
  
- ◆ ***Champion (has vision -- has influence within the parent organization)***
  - conceive a process improvement effort
  - refine the idea into a proposal for a process improvement initiative or project
  - explain the idea and the proposal
  - supply a rationale for spending money on process improvement
  - supply appropriate infrastructure and training
  - monitor project activities and project products
  - conceive an effort to improve on the project's results

## A Better Grouping of the Key Activities into FOUR Roles (cont'd)

- ◆ ***Coach (has detailed technical and leadership knowledge)***
  - **decide what the project must do (the activities and tasks)**
  - **decide how it will be done...what tools, methods and procedures will be used?**
  - **decide who will do it...how will they be organized?**
  - **define the project schedule**
  - **select appropriate infrastructure and training for project members**
  - **monitor project activities and project products**
  - **update the project plan**
  - **did the project do what it planned to do? did it do it well enough?**
  
- ◆ ***Change Agents (relevant base skills and willingness to change)***
  - carry out improved practices as trained
  - correct defects in activities and products
  - complete all remaining planned activities
  - what could be done to improve on the project's results?

## Sponsor Role (owns & donates resources)



Sponsor

- ◆ **The Sponsor is the banker for software process improvement, and the reason why may not be obvious.**
- ◆ **Personnel who may commit or withhold resources for software process improvement are Sponsors.**
- ◆ **Mid-level managers in large organizations may be Sponsors because they may control the flow of resources to process improvement projects.**
- ◆ **Sponsors need not have detailed technical knowledge of improved practices, nor technology introduction leadership skills -- they simply deliver resources to process improvement.**

## Champion Role (vision & influence within the parent organization)



Champion

- ◆ The Champion recruits a Sponsor.
- ◆ Personnel who conceive or sell a software process improvement project within their organization are the project's Champions.
- ◆ The Champion publicizes the project.
- ◆ The Champion persuades appropriate Personnel to participate in the project, and blocks other projects from “poaching” them.
- ◆ As with a Sponsor, a Champion need not have detailed technical knowledge of improved practices, nor technology introduction leadership skills. A Champion persuades an organization to accept and pay for the process improvement project.

## Coach Role (knows improved practices and is expert in introducing them)



Coach

- ◆ **The Coach is the main planner and leader of software process improvement.**
- ◆ ***Personnel* who explain the details of improved practices to be adopted, and who are skilled in guiding others to perform them well are Coaches.**
- ◆ **Technology introduction skills may be rare in the parent organization...It may be necessary to import them from a consulting organization like an SEPG or a outside company.**
- ◆ **Coaches must have detailed technical knowledge of improved practices, and technology introduction leadership skills.**

## Change Agent Role (relevant base skills, willingness to change)



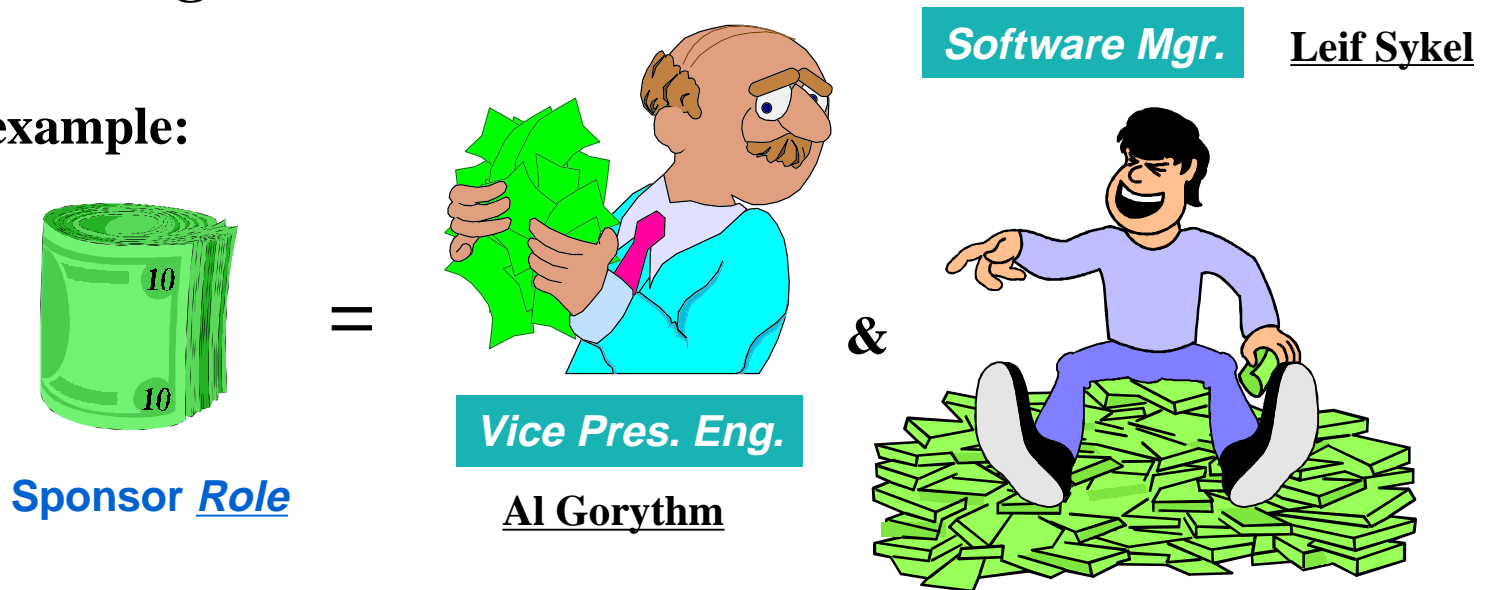
Change Agent

- ◆ **The Change Agent improves the software process.**
- ◆ **Personnel who learn and perform the improved practices and explain them to others are Change Agents.**
- ◆ **Change Agents may have management Positions or technical Positions within the project or parent organization -- because some improved practices may be management practices (e.g., estimation, risk management) and others may be technical practices (e.g., design).**
- ◆ **Change Agents must have or learn detailed knowledge of improved practices.**

## Roles are Not Personnel or Positions

- ◆ Each of the four roles could be filled by one or more Personnel in one or more Positions within a project or organization.

For example:



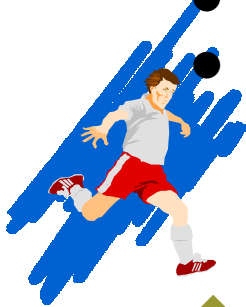




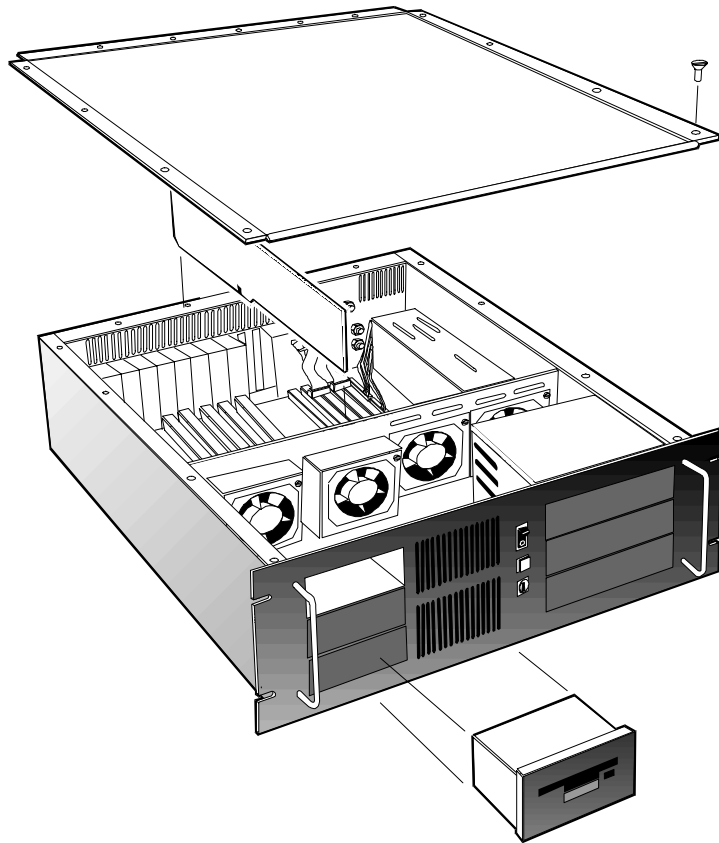
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# Outline

- **Introduction**
- **Software Process Improvement Activities**
- **Software Process Improvement Roles**
- **Some Signs of a Good Coach**
  - Technical Knowledge
  - Change Management Skills
- ◆ **Conclusion**

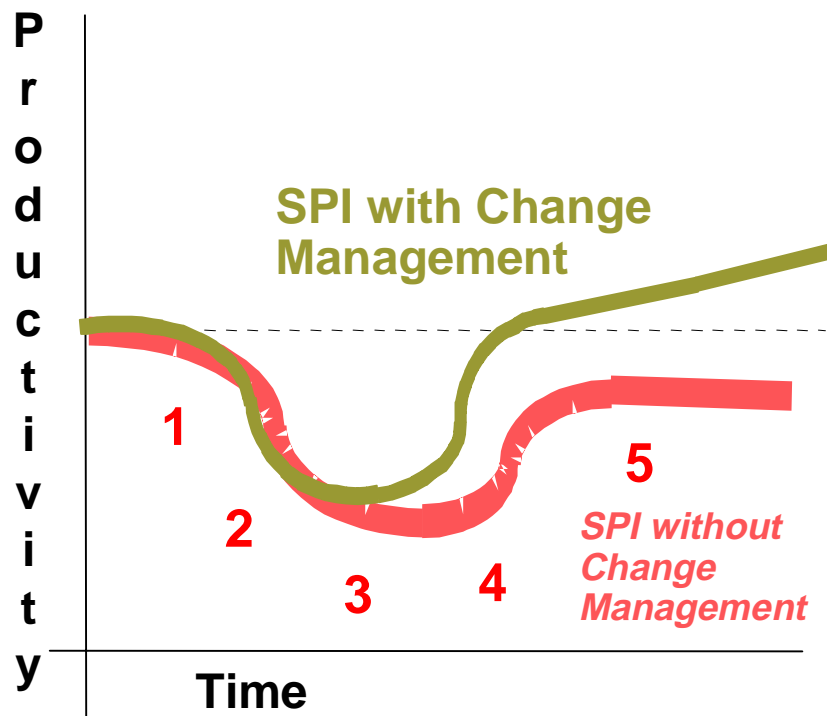


# Some Signs of a Good Coach: Technical Knowledge



- ◆ **Has an inside knowledge of the new practices**
  - knows how to do the KPA activities
  - knows what it means to satisfy the KPA goals
  
- ◆ **Or, Knows how to tap specialized expertise for team member benefit**
  
- ◆ **Knows common mistakes**

## Signs of a Good Coach (cont'd): Change Management Skills



Based on (Kübler-Ross, 1969)

- ◆ Sense of humor
- ◆ Straightforward, honest
- ◆ Inspires trust
- ◆ Communicates well
- ◆ Listens to the team
- ◆ Doesn't hold a grudge
- ◆ **Knows that negative reactions to change usually are not personal**
- ◆ Doesn't let the team stop short of their capability.

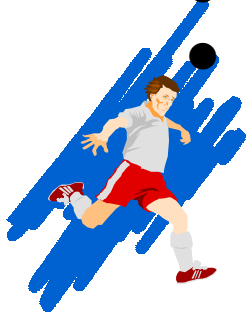


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– Questions for You



# Questions for You

**Pick any actual software process improvement initiative (or software technology introduction effort) within your project or parent organization. Using the descriptions above of the four Roles of Sponsor, Champion, Coach, and Change Agent, and restricting your answers just to your actual initiative, can you answer:**

- ◆ **Who (what Personnel) are the *Sponsors* for that initiative? What Positions do they have within your project or parent organization?**
- ◆ **Who (what Personnel) are the *Champions* for the initiative? What Positions do they have within your project or parent organization?**
- ◆ **Who (what Personnel) are the *Coaches* for your initiative? What Positions do they have within your project or parent organization?**
- ◆ **Who (what Personnel) are the *Change Agents* for your initiative? What Positions do they have within your project or parent organization?**
- ◆ **If for any one or more of the four Roles no one is filling them, how do you think the initiative will work around not doing those activities?**



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## For Further Information

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