# How to Manage a Network of Software Architects within your Company

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Siemens Corporate Technology

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Ingenuity for life

Siemens Qualification Program (Curriculum) for Architects

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- **Siemens has established since 2007 an architecture-oriented qualification program**

- **Original focus on software architects**

- **Meanwhile we have also extended to system architects and test architects**

- **Over 400 persons have successfully completed one of the programs.**
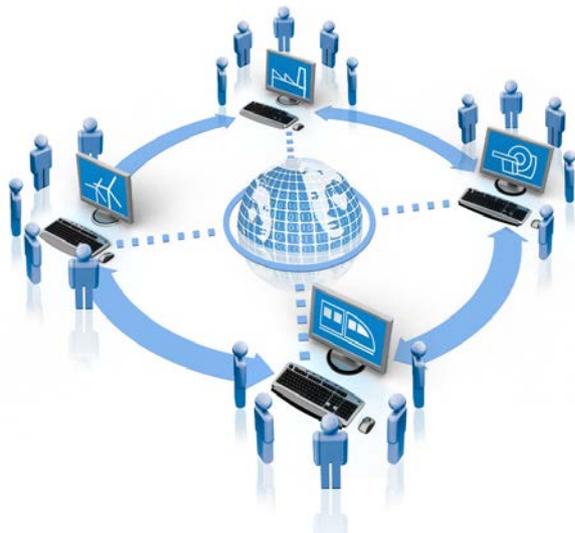
Goals:

- **Key positions** in critical software-related projects are filled with **highly qualified persons**

- **Help ensure that they are empowered,** help remove **blind spots** (avoid the technical focus only)

- **Improve the ability to meet targets in software-related projects** and **master uncertainty**

- **Improve the failure culture**

- **Foster networking so that beneficial to the individual as well as to their organization**

- **Increase the common vision of responsibility and collaboration of key roles across company**

- **Motivate employees and high-potentials**

- **Acquisition of external talents, keep high-potentials**

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(Core) Learning Programs
driven by the Siemens Software Initiative (SWI)

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R&D Manager Workshop, 2012
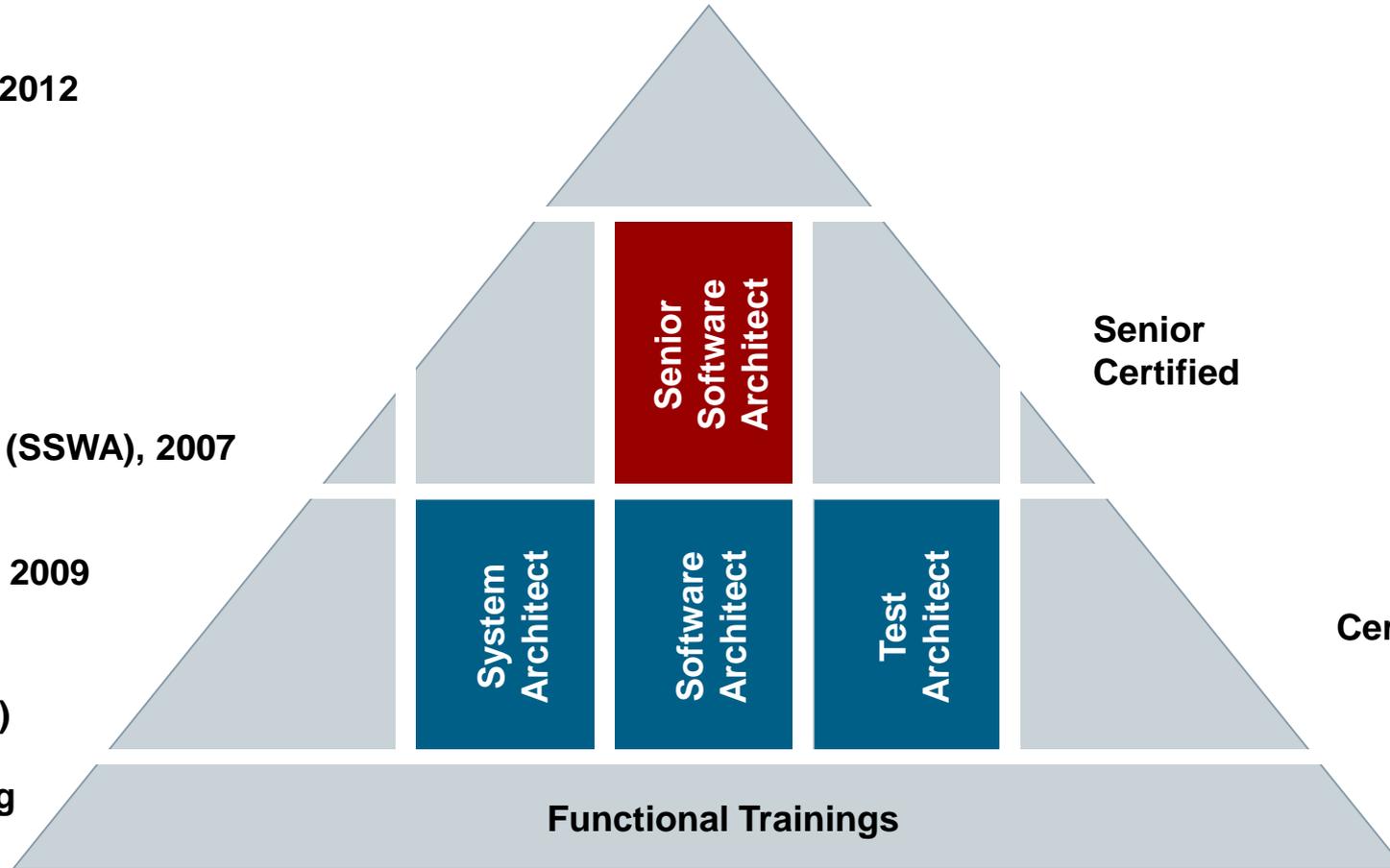Transfer into eLearning

Senior Software Architect (SSWA), 2007

Software Architect (SWA), 2009

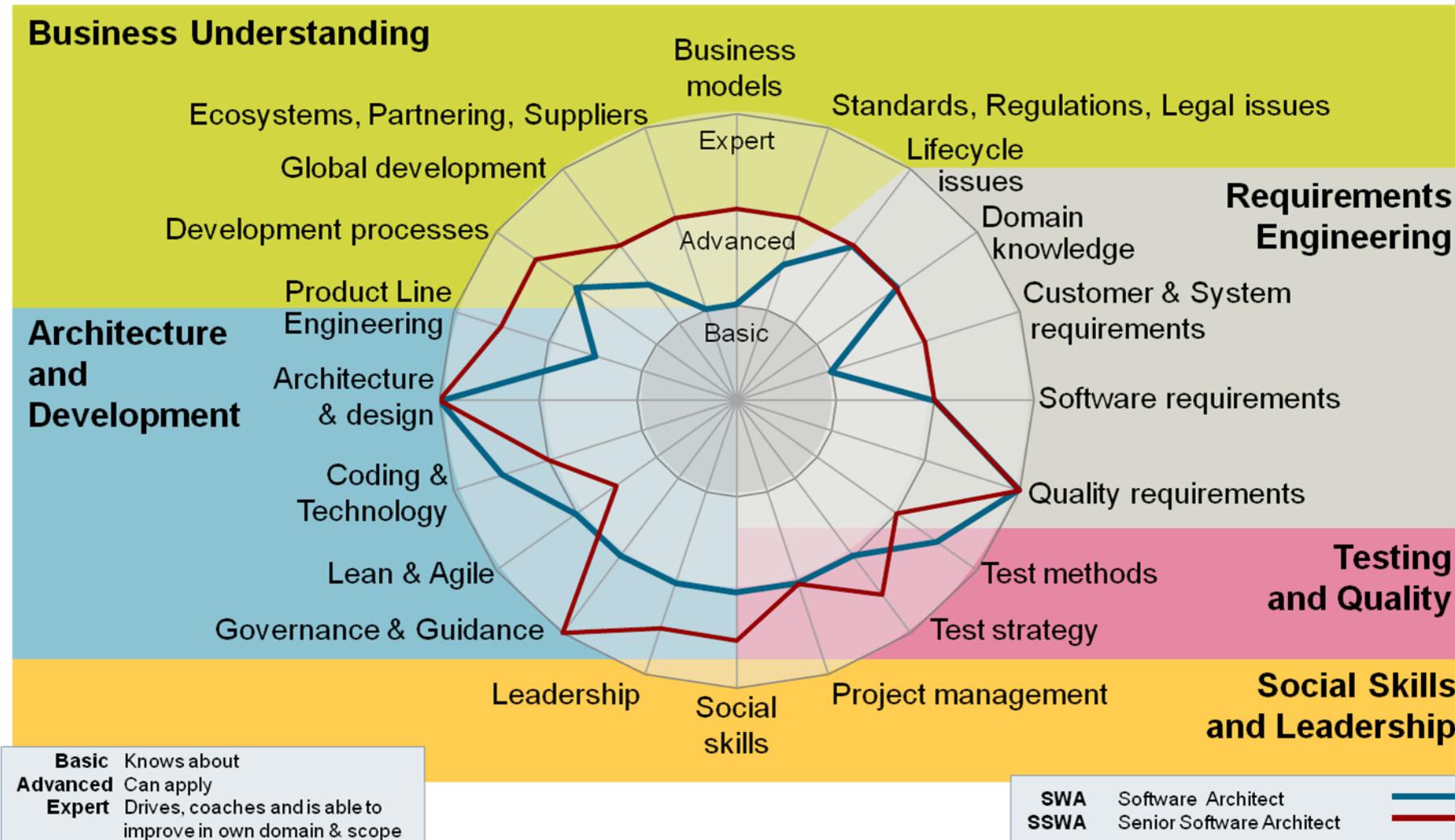**System Architect, 2012**

Test Architect, 2016 (NEW)

**Requirements Engineering
for PM/PLM, 2010**

Senior
Software
Architect

Senior
Certified

System
Architect

Software
Architect

Test
Architect

Certified

Functional Trainings

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Software Architect Spider Diagram – Five major topic areas

Business Understanding

Business models

Ecosystems, Partnering, Suppliers

Standards, Regulations, Legal issues

Global development

Lifecycle issues

Development processes

Requirements Engineering

Domain knowledge

Product Line Engineering

Customer & System requirements

Architecture and Development

Architecture & design

Software requirements

Coding & Technology

Quality requirements

Lean & Agile

Testing and Quality

Governance & Guidance

Test methods

Test strategy

Leadership

Social skills

Project management

Social Skills and Leadership

Expert · Advanced · Basic

Basic	Knows about
Advanced	Can apply
Expert	Drives, coaches and is able to improve in own domain & scope

SWA	Software Architect	
SSWA	Senior Software Architect	

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Guiding Principles

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1. Architecture as well as the continuous governance of it is the key throughout the whole lifecycle as well as across releases.

2. Build on existing basis where feasible (from technical and business perspective) and be able to recognize when such reuse is not suitable.

3. Avoid unnecessary technological platform development and use technical standards and products available on the market.

4. The product (lifecycle) manager in product / system business and the project manager in project / solution business are and must act as the owner of the main requirements and quality characteristics.

5. Pay particular attention to specifying, testing , and realizing non-functional requirements (NFRs), often overlooked but are extremely important.

6. Be prepared and able to handle changing requirements, but be aware about the risk of late changes.

7. Synchronize and balance well across the technical disciplines (software, mechanics, electronics, etc.) and have a close synchronization with business aspects.

8. Work together truly as a team, avoid "silo" thinking, be willing and able to speak and understand the other roles and disciplines.

9. Work iteratively and test-driven, foster defect prevention from the beginning, and strive to identify and resolve technical and business risks early. Getting real and early feedback, both from customer and from realization team, is essential.

10. Structure the system to avoid unnecessary complexity, and to actively enable and support multi-site development.

11. Strive for transparency and base decisions on clear business / technical (not political) reasons.

12. Do not underestimate the importance of soft skills, these can be particularly important for convincing and motivating.
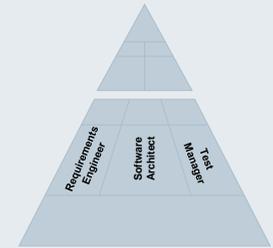
■ Business	■ RE	■ Architecture	■ Testing	■ Social & Leadership

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Key parts of the Qualification Program

**Setting standards
for software development**

Qualification
(courses and
on-the-job training)

**Assuring practical experience
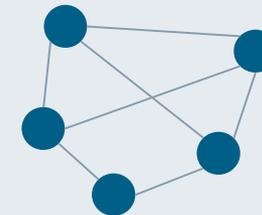for critical projects**

Certification

**Fostering best practice sharing
and experience exchange**

**Software
architects'
network**

Networking to foster best practice sharing and experience exchange

- **Provide a forum that is of real benefit to the community of architects (must want to attend and contribute)**

- **Make known who has what specific expertise**

- **Exchange best practices but also speak openly about failures**

- **Balanced combination of "in person" meetings and online collaboration (intranet, online meetings, webcasts,....)**

- **Both formal (annual workshop) and informal (brown-bag) in person meetings**

- **Continuously encourage use of the architects wiki as the central online information source e.g. doing joint "homeworks" of the training there. (Closed and Open Wikis)**

- **Actively involve architects in cross-organizational activities e.g. "hackathons"**

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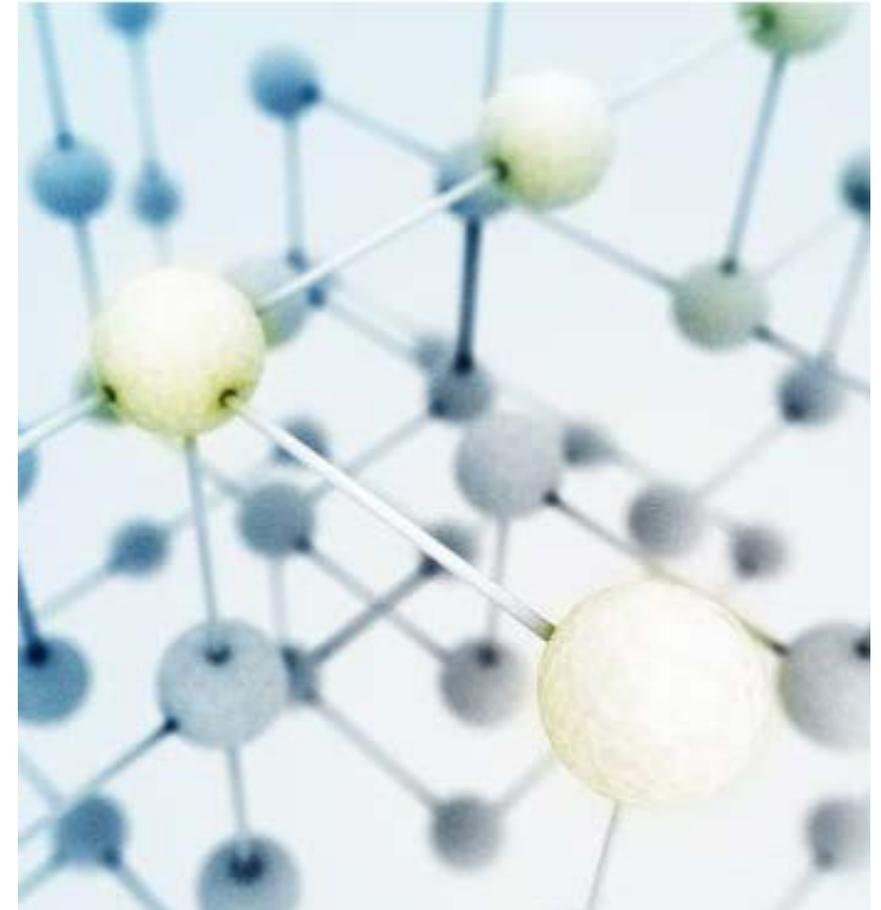
Dimensions of Networking

- **Within a class and across classes e.g. within software architect program**

- **Across the various programs e.g. software architect / system architect**

- **With other non-architecture roles e.g. architect / product manager / project manager**

- **Across business / process / technology view**

- **With "key experts"**

- **Within a geographic area e.g. networking workshops in Germany (all architects)**

- **Within a business unit e.g. establishing a dedicated architecture group**

- **"mentoring" e.g. of SWAs by SSWAs**

- **Across company (across domains) e.g. take advantage that software is a cross-cutting topic**
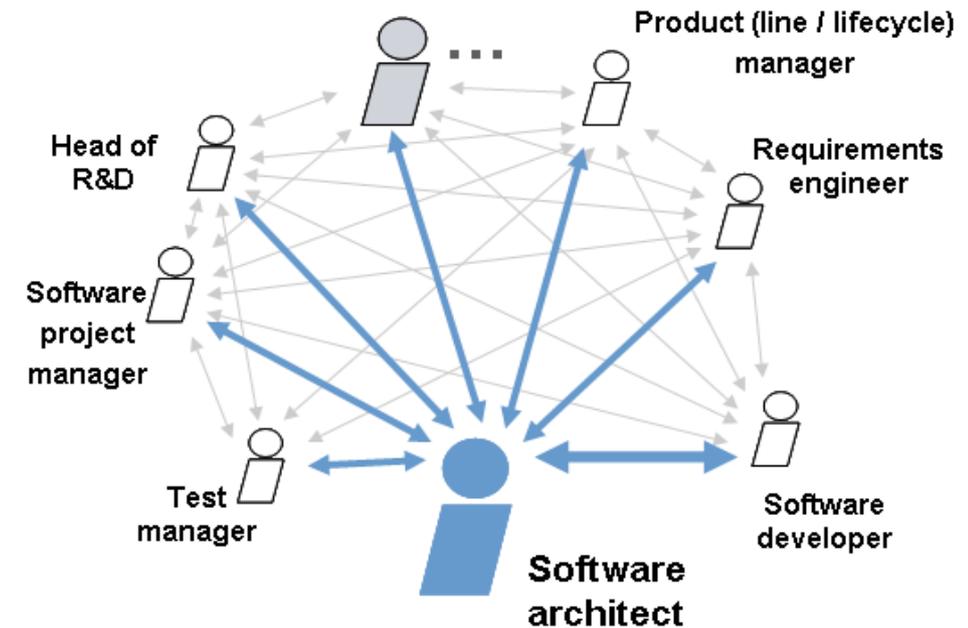
Feedback from Architects Regarding the Qualification Program

- **Due to level of trust and personal connection, persons are more willing to ask colleagues for advice.**

- **The programs help when discussing tradeoffs because there is a common understanding established in the training**

- **Strength in numbers: the common understanding among the architect community helps strengthen the voice of the individual architects**

- The **SWA and SSWA foster good networking amongst architect community and delivered value to my organization**.

- There are several major benefits of the program - **a common Siemens approach to architecture**, the **networking aspect**, **applying the learnings directly in the project**, **learning from colleagues in other business units**

- **Software Architecture is a part of craftsmanship** which must be **learnt and practiced in a systematic manner**. These learning programs provide a **structured and a holistic view**, **accelerating** the whole **learning process.**

- Besides all topics which have been covered and discussed during the workshops and which **improved my daily work** in many ways, the **network of SWAs proved to be very helpful** during the past months.

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Summary / Lessons Learned

- **Have architecture-based foundation that is broadly applicable and enables a consistent understanding e.g. between architect / product manager**

- **Right balance of centrally-driven and grass roots is key**

- **Don't "overcontrol" – carefully motivate, support, encourage** – this may seem slower, but is only way to become self-sustaining

- **Motivate through positive visibility**

- **Establish an open and constructive working environment and explicitly focus also on social skills** – very important for successful networking

- **Enable working in atmosphere of trust (start with closed wikis among architects from one class)**

- **Take explicit advantage of the alumni network** e.g. when architects move to other positions in the company

- **Being able to immediately benefit from the program – and similarly to immediately benefit from the networking – is a key advantage to get buy-in both from architects and their organizations**

- **"Bonding" is most effective when one jointly experiences significant collaboration – actively seek out and arrange such situations (e.g. joint homeworks, architectural reviews, hackathons,…)**

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