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HOW AGILE IT PROJECT MANAGEMENT WAS PROFESSIONALIZED

Jan Pries-Heje
Roskilde University, janph@ruc.dk

Richard Baskerville
Georgia State University, baskerville@acm.org

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Richard Baskerville
Georgia State University, USA
baskerville@acm.org

Jan Pries-Heje
Roskilde University, Denmark
janph@ruc.dk

ABSTRACT

This paper first explains how IT project management became a profession by first being included in project management at large through organizations such as PMI and IPMA and later by developing as a scientific community within AIS in its own right. Second, the paper describes how agility and the agile methods developed and took over much of the IT project arena. However, IT project management had to respond to the "big wave" of agile. We explain how they did that through the professional communities IPMA and PMI that developed agile versions of their recommendations and certifications. In parallel with this development, organizations such as the Agile Alliance and scrum.org started professionalizing agile in its own right. We conclude by discussing whether agile (and the organizations trying to make it into a profession) have achieved enough autonomy to professionalize agile. We conclude that agile has become a formative profession but more work needs to be done to make it into a solid and firm profession in its own right.

Keywords

Agile; Project Management; Professionalization; Autonomy

INTRODUCTION

Recently a report from Hewlett Packard (2017) declared Agile to be the new normal for IT projects and IT Project Management. They reported having interviewed 601 IT developers of which 16% used "Pure Agile" as their development method. 51% were "Leaning toward Agile" and only 9% were either "Pure Waterfall" or "Leaning toward waterfall". This development towards agile came after 50+ years where project management slowly turned into professions with professional associations guarding "the turf" of project management. Becoming a profession requires autonomy - technical, educational, regulatory, and practice autonomy. Then 20 years ago IT project management was the initiated as a research group within AIS (Association of Information Systems). In parallel with that the agile movement started their own professional organizations and started developing their own autonomy. Thus we have arrived at the focus of this paper namely, how is agile IT project management being professionalized?

RESEARCH METHOD

Both authors have worked as researchers focusing on agile (cf. Baskerville & Pries-Heje, 2013; Pries-Heje & Baskerville, 2017) as well as in practice helping many companies to adopt agile development using action research. One author has taught agile scrum master certification courses. Hence, we have followed the field of agile and project management for more than 25 years. For this paper we also undertook a literature review of the history of project management, IT project management, and agile. Our research method for this paper can be described as a mix of autoethnography (Ellis, Adams, & Bochner, 2011) and the historical method (Mason, McKenney, & Copeland, 1997; Mustonen-Ollila & Heikkonen, 2009) involving five steps: (1) build focus questions and specify the domain, (2) gather evidence, (3) critique the evidence, (4) determine patterns in the evidence, (5) compose and transcribe the story. The following describes what we found going through these five steps.

WHAT CONSTITUTES A PROFESSION

What constitutes a profession? According to Orlikowski and Baroudi (1989) drawing on Freidson (1970) it is delineated by four characteristics that mark the category of a profession:

First, *technical autonomy*. Groups representing the profession determine and evaluate the body of knowledge that is accepted as guidance for professional actions. Technical autonomy may be granted by the state.

Second, *educational autonomy*. Groups representing the profession determine and evaluate educational and training programs. These groups often provide formal accreditation of such programs and their institutions in order to delivering high quality, common, and uniform training. Individual admission to the practice of the profession often achieved by passing a board or exam governed by these groups and granting certification and/or licensure. Through accreditation, certification, and licensure, the profession's representatives determine access and entry into the profession.

Third, *practice autonomy*. Groups representing the profession, through technical, educational and regulatory autonomy, determine and evaluate the definition and treatment of clients' problems. Professionals hold standards of practice and preferred treatments for known problems as preeminent guidance for their actions in response to client problems. Members of the profession, not their clients, decide the ideal treatments for client situations.

Fourth, *regulatory autonomy*. Groups representing the profession provide self-regulation within the profession. Groups representing the profession typically enable various forms of peer determination and evaluation as regulatory mechanisms. Regulation of the profession by other professions or occupations is not recognized.

The group representing the profession is often an association of practicing professionals. When there is a singular major professional organization, technical autonomy can be more coherent. A coherent technical autonomy can be a lever to advance a coherent educational and practice autonomy (Freidson, 1970). Such coherence is foundational for achieving regulatory autonomy, especially if jurisdiction is granted by the state. A truly autonomous profession holds a "legally sustained jurisdiction that gives it the exclusive right to perform [its] work, to control the selection and training of its members, and to formulate the standards used in evaluating their work" (p. 384).

Coherence in a profession can be more difficult to achieve when there are multiple, competing groups that seek to represent the profession. It is not uncommon for non-profit or for-profit organizations to assume a representative role. Such groups often acquire revenue by providing education, training, examinations, accreditation, certification, or licensure. With strong autonomy and a growing profession, the revenue can be substantial.

Ideally, professionals are consultants (Freidson, 1970). As contracted consultants, professionals achieve a higher degree of economic and political power than employees. Employed professionals must navigate conflicts between their professional practice autonomy and their employer's ownership autonomy.

PROJECT MANAGEMENT BECOMING A PROFESSION

Early developments of knowledge in project management emerged without an underlying profession. In 1887 the American Engineer Henry Gantt joined Frederick W. Taylor in his pursuit of Scientific Management, in which a core idea is that work can be broken down into parts or motions (Seymour & Hussein, 2014). In 1903 Gantt invented the Gantt chart with rows for each day and columns for each part, and where heavy horizontal lines indicate the starting date and the date that the activity should be done by. It wasn't until the early 1990s that link lines were added to these task bars depicting more precisely dependencies between tasks.

After the Second World War an evolution of project management took place centered around the American Department of Defense's (DoD) and NASA's construction of huge weapon and space systems (Blomquist & Söderholm, 2002). Two influential techniques developed in the 1950s were PERT (Program Evaluation and Review Techniques) where a project plan is seen as a network diagram; and CPM (Critical Path Method) where it is possible – using identification of dependencies between tasks – to identify a critical path. Any delay of a specific activity on the critical path will delay the project as a whole.

The dawn of the project management profession emerged as more and more practitioners started using project management techniques and terminology. The groups representing this nascent profession began forming in 1965 when a network for project managers called "Internet" was founded in Europe. Later the name was changed to IPMA (International Project Management Association). In 1969 the Project Management Institute (PMI) was founded in U.S. These two organizations, IPMA and PMI, are still in existence and they organize thousands of members worldwide.

Both PMI and IPMA are membership based. Membership of these organizations has grown considerably. PMI for example had 5000 members in 1989, 17,000 members in 1995, 45,000 members in 1999, 100,000 members in 2002, and today they claim to have more than 680,000 members in 221 countries and territories (PMI, 2021b).

Technical autonomy grew as the associations developed. In 1976 (Morris, 2001) PMI documented accepted project management practice as a *Body of Knowledge*. They published *A Guide to the Project Management Body of Knowledge* (PMBOK) which is now in its 7th edition (PMI, 2021a). Educational autonomy grew in the 1980s and 1990s as both PMI and IPMA started holding international conferences publishing an international journal containing up-to-date project management research. The first issue of "International Journal of Project Management" published by IPMA came out in February 1983. Educational autonomy became more concrete later in the 1980s when the PMBOK became the basis of PMIs certification program. Project managers could become certified as PMPs, Project Management Professionals. The profession had arrived.

With the emergence of BoK and PMBOK, several national societies for project management became interested in obtaining something similar. Based on current research, the UK-based APM (Association for Project Managers) published what was to become the APM's Body of Knowledge in April 1992. By the mid-1990s, IPMA set out to coordinate the various national

bodies of knowledge. The end result being the IPMA Competence Baseline (ICB) which was first published in 1999 (Caupin, Knopfel, Morris, Motzel, & Pannenbacker, 1999). Other national project management associations published their versions of a Body of Knowledge, including Holland, Switzerland, France and Germany.

Competencies emerged as a key organizing concept for professional knowledge. Version 4, the most current version of the ICB, defines competence as "... the application of knowledge, skills and abilities in order to achieve the desired results" (IPMA, 2015). The structure of the current ICB is that it has 29 Competence Elements (CEs) divided into three groups called: (1) People CEs, (2) Practice CEs; (3) Perspective CEs.

As different versions of the Body of Knowledge arose, various competence baselines became the basis for more certifications. IPMA certified project managers at four levels, named A to D, where IPMA Level A is called "Certified Projects Director", Level B is called "Certified Senior Project Manager", Level C is called "Certified Project Manager", and level D is called a "Certified Project Management Associate".

While technical and educational autonomy are well-developed in project management, regulatory and practice autonomy are formative at best. Similarly to information systems practice, licensure is not typically recognized by the state for project management practice, and clients often make their own determinations as to treatments applied as solutions to their problems.

IT PROJECT MANAGEMENT

At first IT Project Management was just part of the generic project management profession described above. A few people such as Morris (1996) tried to distinguish between the problems faced in IT and non-IT projects. Cotterell and Hughes (1995) brought out a book on "Software Project Management". Watts Humphrey, the director of the Software Engineering Institute (SEI) authored a book (Humphrey, 1996) on how to manage technical people, i.e. in projects.

In the research arena of IT leadership, strategy and management – but not IT-projects – were in focus right from the first International Conference on Information Systems (ICIS) in 1980. Then in 2006 a Special Interest Group (SIG) within AIS was founded in 2006 by Deepak Khazanchi, from University of Nebraska at Omaha. The first International Research Workshop on IT Project Management was held as a pre-ICIS workshop in Milwaukee, Wisconsin in 2006 with approximately 50 attendees. As of 2021, the SIG has over 150 members and it sponsored its 16th International Research Workshop on IT Project Management as a pre-conference event to ICIS 2021 in Austin, Texas.

When taking on the autonomy perspective, IT project managers were seeing themselves as part of the larger professional organizations; PMI and IPMA. However, some members of the SIG began discussing what needs to be added to the PMBOK book of knowledge (Takagi & Varajão, 2020) in order to serve IT projects better.

AGILE MOVES TOWARD PROFESSIONALISATION

Agile refers to "the ability to react quickly, as well as the ability to adapt to new conditions as a response to surprising and unpredictable changes in the market environment" (Rzepka & Bojar, 2020, p. 383). Well known in the Information Systems field, agile methods arose with the need for high-speed software development in response to the exploding market demands of the commercial Internet and the World-Wide Web. Formative ideas were called e-methodology (Baskerville & Pries-Heje, 2001) or software development at "Internet speed" (Baskerville, Ramesh, Levine, Pries-Heje, & Slaughter, 2003).

Based on studies of new product development (Takeuchi & Nonaka, 1986), Jeff Sutherland, working with Ken Schwaber, developed Scrum as a formalized method for developing IT projects in 1995 and presented it in a workshop at the OOPSLA Conference (Sutherland & Schwaber, 1995). In February 2001, Sutherland and Schwaber, along with 15 other agile pioneers wrote the Agile Manifesto (Beck et al., 2001). Following that, the new fast and embracing-change way of working was called "agile": a new way of developing IT projects fast without fixating the requirements early.

The 17 people who wrote the agile manifesto established the *Agile Alliance*. Later in 2001 "some of the original authors as well as some additional people saw the benefit of a more permanent organization. As a result they formed Agile Alliance as a nonprofit organization to disseminate information about Agile" (AgileAlliance, 2021). The showcase of the Alliance's work has been the "Agile20xx" conferences focused on bringing the agile community together to share ideas and experiences.

In 2010 the Agile Alliance wrote a statement on certifications (Larsen, 2010). In this is stated: "Certifications in our industry usually tell you that a person has been exposed to particular knowledge … A skill is not as simple to acquire as knowledge: the learner has to perform the skill badly, recover from mistakes, do it a bit better, and keep repeating the whole process. Especially for the interrelated and interpersonal skills required of agile software development, much of the learning has to take place on real projects". It continues: "Certifications such as Certified Scrum Master and DSDM Foundation are knowledge-based and easy to achieve. We believe the courses that lead to them are good ones. We believe people who attend them get their money's worth. But while the certifications may be evidence of good faith, useful knowledge, and a desire to learn, they are not in

themselves evidence of skill". They end by saying: "We are not a certification body and do not endorse any certification programs." Hence, we can see that the Agile Alliance at this point is not ready to take on this kind of autonomy.

Nevertheless, agile professional groups and their certifications took root and multiplied. Table 1 lists some examples of these groups and their certifications.

Agile Professional Groups	Certifications
Agile Business Consortium	AgilePM
International Project Management Association	ALC
Project Management Institute	PMI-ACP
Scrum Alliance	CSM
scrum.org	PSM
Table 1. Examples of Agile Groups and Certifications	

In 2002 Ken Schwaber founded the Scrum Alliance with Mike Cohn and Esther Derby. The same year Ken Schwaber designed the Certified Scrum Master Course (CSM). On their webpage (ScrumAlliance, 2021) they say that it is considered the "gold standard of agile certification". The CSM is now the first certificate out of four called:

1. Certified Scrum Master
2. Advanced Certified Scrum Master
3. Certified Scrum professional
4. Certified Agile Coach

Thus, the Scrum Alliance is much more willing than the Agile Alliance to build autonomy toward becoming a profession.

Scrum.org was also initiated by Ken Schwaber in 2009. Here he introduced the updated version of CSM in 2009. This updated version is known as Professional Scrum Master (PSM). On the website (scrum.org, 2021) they claim to have certified 607.000 people in PSM by 1 December 2021. Besides PSM scrum.org have none less than 8 different certifications:

1. Professional Scrum Master (PSM)
2. Professional Scrum Product Owner (PSPO)
3. Professional Scrum Developer (PSD)
4. Scaled Professional Scrum
5. Professional Agile Leadership (PAL-1)
6. Professional Agile Leadership – Evidence Based management (PAL.EBM)
7. Professional Scrum with Kanban (PSK-1)
8. Professional Scrum with User Experience PSU 1)

Hence, also the organization scrum.org is willing to take on autonomy towards professionalization.

PMI AND IPMA RESPONDS

We introduced this paper by quoting a study (HP, 2017) saying that way more than half of IT developers preferred agile to waterfall approaches. Oher studies found that up to 85% of IT-projects used agile methods all or some of the time (Pries-Heje & Bucka-Lassen, 2018). This constituted a challenge to "classic" project management. Hence, the two leading professional organizations tried to protect their "turf".

PMI's response was to create a new certification around 2015-16 (PMI, 2021b). "From the people who brought you the PMP®, the PMI Agile Certified Practitioner (PMI-ACP) formally recognizes your knowledge of agile principles and your skill with agile techniques … PMI-ACP certification was created by agilists for agilists ... The PMI-ACP spans many approaches to agile such as Scrum, Kanban, Lean, extreme programming (XP) and test-driven development (TDD.)"

IPMA's response was similar (IPMA, 2021). They launched a new Agile Leadership Certification that is a "certification of proven experience and competence! It focuses on the major success factor of becoming agile, competent individuals". Thus, IPMA refer heavily to the competences and the ICB (IPMA, 2018) in defending their "turf".

DISCUSSION

The field of information systems is an occupation, but not a profession (Orlikowski & Baroudi, 1989). Likewise, the field of agile project management is certainly a defined occupation, but not (yet) a profession. The multitude of professional groups offering competing certifications is one issue. (See Table 1 above.)

While there is overlap in the knowledge underlying each of these certifications, there is variation. It is difficult to achieve coherence in the body of professional knowledge when one starts with competing exams. The profession's *technical autonomy*

is crippled by incoherence in the body of professional knowledge. As a result of the competition, *educational autonomy* is formative. The distinctive knowledge bases of the competing groups have to be made sufficiently uniform to establish an evaluation that an applicant for membership is qualified. Similarly, the uniform body of knowledge is necessary to establish *regulatory autonomy*. Regulatory mechanisms are fragmented because peer qualifications are diverse thereby diminishing the reliability and validity of peer determination and evaluation. Similarly, the non-uniform body of knowledge limits *practice autonomy* because defined professional practices may well vary depending on which of the competing bodies of knowledge is operable in which client situations. Table 2 summarizes the current state in each of the categories of the profession autonomy in agile project management. It may well be that the presence of competing groups and certifications are crippling efforts to professionalize agile. But we see from the above, that the competition diminishes the state of the different elements in different ways. The table also summarizes the basis for each diminished state, as described above.

Profession Autonomy	State	Basis
Technical autonomy	Incoherent	Implied by diverse, competitive certifications
Educational autonomy	Formative	Competing groups offering competing certifications
Practice autonomy	Variable	Competing professional practices
Regulatory autonomy	Non-uniform	Evaluation complicated by competing knowledge

Table 2. State and Basis of Different Categories of Professional Autonomy

Future research is needed to track the further development of agile project management as a profession. Such work could be descriptive/analytical observations (as in this paper) on future states of agile. Such work might alternatively be normative/prescriptive treatments to improve the formative issues of incoherence and non-uniformity that impede the development of the profession. Other work is needed to examine the impact of the *gig-economy* on fledgling professions like agile project management (and even information systems more generally). The gig-economy implies short-term, flexible, freelance, contract work. Clouds drawn by the COVID pandemic over the future of work have opened the possibility of a permanent boost in the future gig-economy. If more agile project management roles go the way of independent consulting contracts, the resulting economic and political power may more rapidly enable the completion of the professionalization of fledgling professions like agile.

CONCLUSION

Our research question was, "How is agile IT project management being professionalized?" Our answer to this question is that agile is in a state of becoming professionalized through attainments in the four main categories of profession autonomy. Its current state involves achievements, underway but incomplete, in all four categories. First, the field has technical autonomy, but this is incoherent. Second, it has educational autonomy, but this is formative. Third, it has practice autonomy, but this is variable. Fourth, it has regulatory autonomy, but this is non-uniform. Hence, the status today is that agile project management is a distinct occupation in a definable state towards becoming a formative profession. We may then ask, how can the professionalization of agile IT project management proceed? Previous work in professionalization suggests more coherence in the field's technical autonomy will provide the most effective lever that can advance the other three autonomy categories (educational, practice, and regulatory). With more coherence in the body of knowledge, variation in practices would become more detectable and thereby enable more uniform evaluation. Uniform evaluation would support stronger educational and regulatory autonomy. That would be a way forward from being a formative profession to becoming a firm and solid profession.

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